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## RELEVANCE OF THE CREATION OF THE NATIONAL INDEX OF CITATION OF SCIENTIFIC ARTICLES IN UZBEKISTAN

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**Abstract.** *Manufacturing processes in the publishing industry have long gone digital. Today, it is natural that scientometric research and methods are almost entirely focused on the processing of data presented on the Internet. Provide the ability to conduct quantitative and qualitative analysis by comparing key indicators of bibliometric, altrometric and publishing activities for scientific publications, authors and organizations. To address this problem, the database, in addition to bibliographic information about articles and links, should include current verified and normalized information and constantly update it. From this point of view, the level of quality of scientific publications is determined by a number of criteria put forward by modern publishing practice and international standards of scientific periodicals. The article analyzes the relevance of creating a national index of citing scientific articles in Uzbekistan, taking into account the experience of developed countries.*

**Keywords:** *article, edition, rating, citation index, editorial office, scientific journal, electronic edition.*

## АКТУАЛЬНОСТЬ СОЗДАНИЯ НАЦИОНАЛЬНОГО ИНДЕКС ЦИТИРОВАНИЯ НАУЧНЫХ СТАТЕЙ В УЗБЕКИСТАНЕ

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**Аннотация.** Производственная деятельность в издательской индустрии давно перешла в цифровое пространство. Сегодня естественно, что наукометрические исследования и методы почти полностью сосредоточены на обработке данных, представленных в Интернете. Обеспечить возможность провести количественный и качественный анализ путем сравнения ключевых показателей библиометрические, алтронетрики и издательская деятельность для научных публикаций, авторов и организаций. Для решения этой проблемы база данных, помимо библиографической информации о статьях и ссылках, должна включать актуальную проверенную и нормализованную информацию и постоянно обновлять его. С этой точки зрения уровень качества научных публикаций определяется рядом критериев, выдвигаемых современной издательской практикой и международными стандартами научной периодики. В статье анализируется актуальность создания национального индекса цитирования научных статей в Узбекистане с учетом опыта развитых стран.

**Ключевые слова:** статья, издание, рейтинг, индекс цитирования, редакция, научный журнал, электронное издание.

## **ЎЗБЕКИСТОНДА ИЛМИЙ МАҚОЛАЛАРНИНГ МИЛЛИЙ ИҚТИБОС ИНДЕКСИНИ ЯРАТИШНИНГ АКТУАЛЛИГИ**

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**Аннотация.** Нашриёт соҳасида ишлаб чиқариш фаолияти узоқ вақт давомида рақамли маконга ўтди. Бугунги кунда илмиётриқ тадқиқотлар ва услублар деярли тўлиқ Интернетда тақдим этилган маълумотларни қайта ишлашга йўналтирилганлиги табиийдир. Илмий нашрлар, муаллифлар ва ташкилотларга нисбатан асосий библиометриқ кўрсаткичлар, алтметрикалар ва нашр фаолиятини таққослаш орқали миқдорий ва сифат таҳлилларини ўтказиш имкониятини таъминлаш муҳимдир. Мазкур муаммони ҳал қилиш учун маълумотлар базаси, мақолалар ва келтирилган маълумотномалар ҳақидаги библиографик маълумотлар тегишли текширилган ва нормаллаштирилган маълумотларни ўз ичига олиши ҳамда доимий равишда янгиланиб туриши керак. Шу нуқтаи назардан қараганда, илмий нашриётлар ва улар нашр этаётган нашрларнинг сифат даражаси замонавий



*нашриёт амалиёти ва илмий даврий нашрларнинг халқаро стандартлари томонидан илгари сурилган қатор мезонларга қараб белгиланади. Ушбу мақолада ривожланган давлатлар тажрибасини инобатга олган ҳолда, Ўзбекистонда илмий мақолаларнинг миллий иқтибос индексини яратишнинг актуаллиги таҳлил қилинган.*

**Калит сўзлар:** мақола, нашриёт, рейтинг, иқтибос индекси, таҳририят, илмий журнал, рақамли нашр.

Production processes in the publishing industry has shifted to the digital space since a long time ago. The vast majority of traditional media are represented in it by their electronic counterparts, and publishing business processes are carried out through telecommunication networks. It is natural that current scientometric research and methods are almost completely focused on processing of data presented on the Internet.

From this point of view, the quality level of scientific publishing houses and publications they publish are determined by a number of criteria put forward by modern publishing practice and international standards of scientific periodicals. The basic conditions for the functioning and successful promotion of a reputable scientific publishing house imply the following:

1. Automation of the editorial and publishing process
2. Placing information about a periodical on the Internet
3. Placement of publications on the Internet

There are more than 200 scientific journals in Uzbekistan, which constitute the core of the most authoritative sources of scientific information and are listed in scientific publications recommended by the Higher Attestation Commission of the Republic of Uzbekistan for publishing of major scientific findings.

However, only a few of these journals are properly represented on the Internet. The overwhelming majority of paper magazines published in Uzbekistan not only have public electronic versions, but even ordinary "business card" websites. "Informatization" in the editorial and publishing process of scientific publications in Uzbekistan, at best,

is limited only to the use of popular universal means, such as office suites, layout systems, e-mail for communications, which by today's standards is equivalent to "manual labor".

This state of affairs in modern conditions significantly complicates dissemination of research outcomes and the exchange of the latest scientific findings between members of the scientific community. Taking into account the growing trend and efforts to enhance presentation of domestic publications and publications in authoritative international bibliographic databases, the low level of informatization in the editorial and publishing process is a strong "inhibiting" factor.

In general, in addition to certain organizational requirements, the inclusion of a periodical, for example, in such an authoritative Scopus database, is also accompanied by a number of technical requirements for its electronic version (online system): site structure; the possibility of structured indexing of content; SEO-optimization, auto-tagging of site pages for search engines; the presence of a scientometric apparatus; functions and support of bibliographic information and scientometric data exchange formats (OAI-MPH, XML) for integration with databases (WorldCat, Google Scholar, DOAJ, CrossRef, etc.); mechanism for licensing electronic content; payment instruments; registration of DOI identifiers; support for various models of access to publications, including: immediate open access (Gold Open Access),

The current situation in the area under consideration is largely due to the nature of funding for domestic scientific publications - editorial offices are almost entirely financed



by the funds of the founders, most of which, in turn, are state institutions. In this case, the development of an electronic publication management system that meets international requirements becomes an extremely difficult task for any individual publishing house, both from a personnel and financial point of view. It should be borne in mind that the costs are not limited to one development - the life cycle of any software requires continuous technical support, further development, correction of possible errors and upgrade.

The idea of creating such a system at the republican level (a kind of hosting of Uzbek scientific journals), existing as a commercial project and managed by one company, seems to be more rational. With this option, the publishing houses of scientific periodicals get rid of the costs of their own IT infrastructure, and have relatively low costs for its rental and support in the form of outsourcing services.

Another important problem is related to enabling quantitative and qualitative analysis by comparing main bibliometric indicators, altmetrics and publication activity in relation to scientific publications, authors and organizations. To solve this problem, the database, in addition to bibliographic information about articles and cited references, must contain corresponding verified and normalized information and should be constantly updated.

From the point of view of long-term planning and management of the development of domestic science and education, the implementation of analytical tools within the system can provide opportunities for identifying the most relevant or, on the contrary, losing their relevance scientific areas based on a quantitative analysis of publications on various topics and the dynamics of their citation.

### **Comparative analysis of analogues of the created scientific and innovative development**

The publication of scientific journals, collections of articles and proceedings of conferences, as well as the formation

of electronic educational and scientific collections is an integral part of the research and educational activities of any leading university and research institute. To carry out this activity, a number of information systems for managing scientific journals and publications have been created in the world. The most intensive growth in the production of such systems occurred in 2004-2008. By now, many of the systems developed over 10 years ago have gained wide popularity and turned into successful continuously evolving software products. Some systems have even turned into an industry standard of sorts.

The world's largest publishing houses of scientific literature were among the first to use ICT in their work, introduced and constantly develop their own electronic publishing systems. Examples are Springer's information system, Science Direct platform (Scopus) publishing house Elsevier, as well as the system of electronic publications of the scientific archive arXiv.org. Two Russian projects - eLIBRARY.ru (RSCI) and the mathematical portal Math-Net.Ru - are innovative in a number of solutions used. We also note the project of automation of the electronic journal Lobachevskii Journal of Mathematics ([www.ljm.ru](http://www.ljm.ru)), within the framework of which the process of reviewing scientific work by the editorial board of the journal was completely automated, including the automatic appointment of reviewers from the expert base, support of the notification system and control of deadlines. For the first time in an electronic mathematical journal, the conversion of incoming articles and their storage in the MathML format were organized, which made it possible to implement a search system by formulas.

The same is true for small publishers that publish one or two editions at a time. In most cases, small publishers order the development of functionally simple publishing management systems that meet all their own needs.

However, from a practical point of view, the most interesting are free (free) open





source systems. Open source facilitates refining of such systems and giving them the required functionality. It is also important that many of these systems have an active community of users and developers, which ensures the continuous development and improvement of systems, taking into account the emerging innovative methods and advanced information technologies.

**Open Journal System** (<https://pkp.sfu.ca/ojs/>) open source software system for managing electronic scientific journals; is being developed as part of the Public Knowledge Project by Simon Fraser University, the University of British Columbia, the University of Pittsburgh, the Ontario Council of University Libraries, the School of Education at Stanford University, and the California Digital Library.

OJS is licensed under the GNU / GPL license. The project is continuously evolving, new versions of the system keep being released, a stable full version is available for self-installation. As of December 2011, the OJS system is used by over 11,500 journals worldwide.

OJS is a unified e-journal management platform that supports a wide range of business models for periodicals and provisioning settings from fully open source resources to short annotations and commercial subscriptions. A clear separation allows the system to be used as a single common platform for managing all the periodic resources of a separate research or educational organization, since the journals being hosted are managed completely independently, and at the same time, the settings of one of them do not affect the work of the other in any way.

The functionality of the system allows online interaction between the participants in the editorial process. The OJS system is configured as a cloud-based software package, can be deployed and managed locally, all business processes are configured directly by the editors of each particular edition.

The advantage of OJS as a basic platform is a streamlined method of use.

The presence of a constantly updated gallery of modules also serves as an important circumstance and allows you to take into account the peculiarities of scientific publications and not try to unify the publishing activity as a whole. The technology for creating software modules is based on open code, which allows you to include services in the system that take into account the specifics of individual scientific publications.

**ePublishing Toolkit** (<http://dev.livingreviews.org/epubtk/>) a publishing toolbox developed by the Max Planck Society to manage the Living Reviews family of electronic scientific journals... There is no separate complete distribution kit for installation, however, all the source codes of the system are available in the developer's online repository.

Information space of system ePublishing Toolkit consists of a magazine family, which in turn is subdivided into individual magazines. Each magazine is a container for publications; almost all the functionality of the ePublishing system is associated with magazines. When created, each journal within the framework of one installation of the system is assigned a unique identifier, which is further used in various scenarios of the system operation.

Architectural system ePublishing Toolkit consists of components that can work independently. Each component contains a set of functions for working with a separate class of system objects. The basic functions required by many components are implemented as shared libraries. The individual components are responsible for creating publications from source material and presenting them to the Internet; to manage links; to manage the life cycle and business processes of the publishing house, etc.

In ePublishing Toolkit declares maximum compliance with the open standards OpenSearch, OAI-PMH, authorization is possible using OpenID. System ePublishing Toolkit has a role-based model of users with different access rights and a multi-step



resource publishing process that supports all stages of the article lifecycle from initial draft upload to posting the final draft on the Internet, adapted for Living Reviews processes.

System ePublishing Toolkit can be installed on MS Windows and Linux operating systems; it requires Python (version 2.3 or higher) to be installed, as well as a number of Python packages, which makes the installation process quite laborious. Setting up the system requires highly qualified personnel.

**Digital Publishing System** (<http://dpubs.org/>) a free information system for online publication of academic scientific and educational journals, conference proceedings and monographs. It was developed in the USA by Cornell University and Pennsylvania State University. On the basis of this system, the Cornell University Library has implemented the Project Euclid project.

At the moment, about 10 projects have been implemented on the basis of DPubS, one way or another related to the organizations that developed this system. The main feature of the DPubS system can be considered that the initiator of its development was the Cornell University Library (with the aim of creating an electronic publishing system), and not various scientific and educational communities. This was reflected in the features of the system's functionality. In particular, the DPubS system is designed taking into account the problems of ensuring the safety of information resources and fault tolerance, which are acutely faced by all electronic libraries; in addition, there is support for working with publishing software and such repositories of information objects such as DSpace or FEDORA.

DPubS is a set of interconnected services and has a modular architecture. Functionally, DPubS consists of a collection aggregation module, an editorial service, an indexing service, a search mediator, a feedback module, a repository, subscription services, and user interface and administration modules. The editorial service provides initial loading of articles and their transfer

to reviewers, further preparation and publication of journal issues and their final upload to the repository.

DPubS implements a role model of users with different access rights. It is possible to provide both paid and free access to resources. Installation of DPubS requires taking into account the peculiarities of the architecture and the internal interconnections of the elements of the system. The lack of updates since 2008 and the corresponding documentation makes installation and implementation of this system a very non-trivial task.

**Ambra Publishing System** (<https://plos.github.io/ambraproject/>) an electronic publishing system developed by the non-profit organization Topaz. Ambra is a web application with a service-oriented architecture for publishing research materials in all fields of science and designed to help bring published scientific articles to life. Ambra is also used as a platform to host a number of PLOS magazines.

The information model of the Ambra system is based on the Topaz platform; specially configured FEDORA repository and Mulgara DBMS (open source RDF database) are used as data storage. The main feature of the Ambra system can be considered the use of object-relational mapping technology in the development of the system, as well as a non-relational DBMS as a storage for a part of information objects. Since the interaction between the individual modules of the Ambra system is carried out over the TCP protocol, the structure of the system can be distributed. The publication upload process is simplified and consists of only two steps (user upload and administrator confirmation), there are no special roles for editors and reviewers. Since all articles are stored in the FEDORA repository,

The Ambra web application can be installed for both Windows and UNIX operating systems; however, the distribution kit does not contain an installer wizard, and therefore the installation of the complex becomes very difficult. The last release of the



system is dated 2009, so it is difficult to draw conclusions about the further development of the project.

**GAPWorks** (<https://sourceforge.net/projects/gapworks.berlios/>) electronic publishing system, which was developed in the framework of a project of German academic publishing houses, funded by the German Research Foundation (DFG). GARWorks provides components for electronic publishing (with support for the review process), user management, roles, etc. The GAPWorks system is implemented using PHP and PostgreSQL DBMS. It provides a review process, user management functions, OAI-PMH support, and a customizable set of templates. Despite the fact that the GAPWorks distribution kit is available for download, there is no information about the development of the system since 2006, and there is no data on the implemented projects either.

**Drupal E-Journal** (<https://www.drupal.org/project/ejournal>) - a specially designed module for managing electronic journal, created for the well-known content management system Drupal. Initially, this module was developed as an analogue of the OJS system for Drupal and provides functions for managing magazines, their issues and articles, there is also support for user roles and access rights. Since the Drupal E-Journal system is architecturally a separate Drupal module, it is possible to use other Drupal add-ons and modules with it, which seems to be very useful. The last version was released in 2011, a stable assembly of the module for Drupal versions 5.x and 6.x is also available.

**Annotum** (<http://annotum.org/about.html>) - a scientific publishing and publishing platform based on WordPress. It is analogous to the Drupal E-Journal plugin. Annotum fills some of the gaps in WordPress functionality related to academic publishing. Among the possibilities Annotum includes: strict compliance with a subset of the set of

tags for publishing journal articles; several import and export formats; export to PDF and XML formats; citing articles; editorial workflow; auto-generation and registration of documents CrossRef DOI, etc.

**Scholastica** (<https://scholasticahq.com/>) is a cloud-based journal and manuscript management platform. Scholastica includes powerful built-in analytics, file versioning, built-in email, customizable reviewer feedback forms, customer support for all users, and single / double-blind peer review options, as well as many other features to support the editorial and publishing process.

There are also many other electronic systems for managing scientific periodicals. As a rule, they are small autonomous systems that provide navigation through content, or they are part of some kind of comprehensive information system. Often these developments are functionally limited, do not take into account the specifics of different scientific journals and, as a result, do not provide automation of all the palette of business processes associated with the management of electronic scientific journals. The fact is that they were created to ensure the functioning of specific electronic publications, and this led to significant differences in both the architecture of systems and functionality.

Despite the fact that there is no universal model of an electronic journal management system describing specific requirements and services, almost all electronic scientific journal management systems, including those discussed above, support generally accepted standards in the field of data integration and exchange. If we talk directly about free open systems, then at the current moment in time most projects have not received further significant development, the only exception is one actively developing project - the Open Journal Systems system.



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