

Scopus Database as a Source of Representing Bulgarian Science to the International Academic Community: The Present and Future Prospects

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Abstract. The assessment of research performance using international abstract and citation databases, or so-called global citation indexes, is currently the key criterion against which the advance of science is measured practically in all countries. In 2004 the publishing company Elsevier launched a new database – Scopus, which became a major competitor with the reputable resource Web of Science operating since 1964. Developing very successfully, Scopus has become the leading and largest abstract and citation database in the world. The indicators and data provided by Scopus are used in international university rankings and, in general, in the performance assessment of researchers, scientific schools, organizations and countries all over the world. The sources of such information are publications coming from over 150 countries, both from leading international journals and publishing houses, as well as from regional titles indexed in international databases. This paper sets out to characterize the Scopus database as a whole, along with its categories and inclusion criteria. Bulgarian Scopus publications and titles are analyzed, with the information about 48 Bulgarian journals reviewed for inclusion and included in Scopus given. The number of Bulgarian journals included in Scopus is expected to rise, provided that international publication standards and Scopus requirements are met.

Keywords: Information Resources, Abstract Databases, Citation Indexes, Scopus, Scholarly Journals, Indexing, Evaluation, Selection, Criteria, Research Assessment, Bulgaria

1 Scopus Content Coverage

The international abstract and citation database of peer-review literature Scopus was created by the publishing company Elsevier (the Netherlands) on the basis of its bibliographic databases (Compendex, Embase and Geobase), as well as the records from Medline, a database compiled by the US National Library of Medicine (NLM). Scopus was successfully launched in November 2004. The Scopus citation index initially covered references from publications dating back to 1996; however, after a decision to extend its retrospection, over 210 million cited references from 11.5 million sources were added from the 1970-1995 period. Records coming from Medline are not

considered indexed in Scopus unless, along with these records, the title provides full texts of papers for indexation in Scopus. However, the bibliographic records from Medline are kept in Scopus always and until NLM continues to index this particular journal.

Currently, Scopus includes records for over 68 million publications from peer-reviewed scholarly titles (journals and yearbooks), conference materials, books and book series in all fields of science, technology, medicine, social science, arts and humanities (Scopus Content Coverage Guide. Updated Jan. 2016). This database is developing very quickly in different directions (Meester, 2015) (Steinginga, 2017). Over 2.8 million publications are uploading in it annually, with the information being updated daily. 45 million publications covered by Scopus have citations yielding over 1.2 billion cited references in total. In addition, over 600 million cited references relate to publications that are not indexed in Scopus. These references provide a useful analytical tool for the journals that are applying and being reviewed to be included in Scopus, as well as, in general, for anyone searching cited references to publications from any source. Any author can easily check whether their publications have been cited, even in the literature not covered by Scopus. However, the statistics in the analytical part of this database is given only by publications indexed in Scopus.

Scopus contains records for publications back to 1788. In terms of volume, Scopus is nowadays considered to be the largest information resource in the world, both as a citation index and abstract database.

Journals constitute the bulk of the content in Scopus, with their number increasing rapidly. At present, Scopus contains over 22,700 titles from more than 5,000 publishing houses. As an illustration, if this number is compared with the Ulrich's Periodicals Directory data (<http://ulrichsweb.serialssolutions.com/>), the Scopus titles will make up over the half of 40,000 listed scholarly periodicals (print and electronic-only). More than 3,600 journals indexed in Scopus are of open-access type, which means that their content becomes available to the reader via the Internet immediately upon publication. It should be noted that Scopus assigns an open-access mark to a journal only in case this title has been registered in DOAJ (<http://doaj.org>) and/or ROAD (<http://road.issn.org/>); therefore, the actual number of open-access journals indexed in Scopus is significantly higher. The total number of Scopus-indexed journals contains over 600 electronic titles (electronic only).

Scopus is an abstract rather than full-text database. Nevertheless, it is full texts that serve as a source of data extraction. The largest part of information is extracted from papers automatically, which fact makes an appropriate representation of the following critically important:

Paper's metadata: authors' names; paper title; publication data – journal, year, volume, number, pages “from-to”; abstract; keywords;

Additional data necessary for the citation index: author's institutional affiliation (institution, city, country); data on funding sources (acknowledgements); corresponding author's and/or other authors' contacts (email addresses);

References: citation of literature sources used in creation of the work.

In order to improve citation indicators, it has recently become crucial for every paper published in a journal to have a unique digital object identifier – DOI (Digital Object Identifier) (<http://doi.org>), and for the author to have a unique author identifier – ORCID (<http://orcid.org>). ORCID, which can easily be received through registration in the system, is currently used by over 3.5 million researchers. ORCID and DOI, extracted from papers and included into Scopus, allow the high visualization and availability of citations in Scopus. The data on papers and their citations from Scopus are included in ORCID automatically. Therefore, it is highly desirable that every journal should provide information about these identifiers. It should be noted that papers having DOI are to be registered in CrossRef (<http://crossref.com>).

Experts reviewing a journal for inclusion in Scopus also need information about the period between the submission of an article and its publication, since it indirectly evidences the quality of the peer review and editorial process in general. More detailed data about authors (their academic degree, title and position) are important for assessment of the overall level of the journal's authors.

In order to avoid mistakes when citing the journal's content, it is recommended that the paper metadata should be extended with a full bibliographic description of this paper (an optional title could be "For citation"). However, it is not recommended that phrases, such as "For referencing" or "Reference" be used, because the Scopus system will automatically read this description as References (Literature sources)¹.

The quality and completeness of the data presented in articles determine the quality of paper indexation in the database, which eventually result in their higher popularity and citation. Data extracted from publications and treated statistically form a basis for the analytical part of the database, making it different from an abstract database. Thanks to its rich search engines, broad coverage of original sources, various indicators based on publications' data and their citation, any authorized user can receive thematic, bibliometric and, in general – comprehensive scientometric and analytical information about scientific research conducted in any part of the world. This database gives an idea about how successful, influential and acknowledged the published research results are of all the participants of science production – authors, organizations, regions, countries as a whole and, of course, – about the success of titles that publish these results.

In order to assess titles in terms of their quality, Scopus applies a "basket of metrics" (Steingina, 2017) (Colledge & James, 2015). Key indicators, or metrics, involve SJR, SNIP and CiteScore (<https://journalmetrics.scopus.com/>). CiteScore was introduced in late 2016 and is calculated in a similar manner as the Web of Science Impact Factor (IF); however, CiteScore uses a 3-year citation "window" (not 2-year as the classical IF) and has a number of other distinct features. The main difference is that citations per publication are derived from all serial sources indexed in Scopus – journals, conference proceedings and book series. The second difference is that, along with the annual CiteScore calculated for the full calendar year, it gives the current view of how a journal

¹ Scopus derives data from papers automatically, with the information being searched either by the place in the paper (authors, title, etc.), a keyword (e.g. Acknowledgements to derive information about funding sources) or a sign (e.g. @ - email sign) used in the text

is performing during the course of this year. This indicator – Tracking CiteScore – is updated every month.

2 Bulgarian Scientific Journals in Scopus

Scopus indexes titles published in 40 languages from over 150 countries. By publications included in this database, each country demonstrates its potential in various academic fields. In terms of the number of publications, Bulgaria now ranks 48th among other countries. In total, Scopus currently indexes about 98,000 publications of Bulgarian researchers, with about 36,000 papers² having been published over the past 10 years. The number of journal publications amounts to 86,000 papers, 29,000 of which have been published over the past 10 years (this figure equals 30% of all Bulgarian publications present in Scopus).

It should be noted that, although other countries see a positive dynamics in terms of the annual growth of their publications, this trend is not characteristic of Bulgarian authors. This is largely due to the insignificant number of Bulgarian journals that have been recently included into Scopus. Along with this, the number of Bulgarian publications in international journals has also remained unchanged.

At present, 48 Bulgarian journals can be found in the Scopus system. This list includes 4 titles that, according to the Scopus Source List (<https://www.elsevier.com/solutions/scopus/content>), are published by foreign publishers, although Journal Citation Reports (JCR) Web of Science indicates them as Bulgarian. Only 5 journals were accepted into Scopus in 2014-2016, with two journals coming from Medline. Since Medline records are not indexed in Scopus, Medline journals are not considered Scopus-indexed as well. These records remain abstracts, having no references and incomplete authors' affiliations (only first author's affiliation is given). For a journal to have a full Scopus coverage, it should be submitted for inclusion as a new journal (<http://suggestor.step.scopus.com/suggestTitle/step2.cfm>). Only after the journal has been accepted, the system will integrate its Medline records and the data extracted from its papers (Kirillova, 2014).

Only 9 journals (19%) indexed in Scopus are published in Bulgarian and 2 accepted papers publish in two languages (Bulgarian-English and Spanish-English). The rest of the journals are published solely in English. 18 Journals (38%) follow the open-access model.

According to the top-level classification of Scopus journals – All Science Journals Classification (ASJC), which consists of 4 major thematic categories and covers all scientific disciplines (Life Sciences; Health Sciences; Physical Sciences; Social Sciences), Bulgarian journals are homogeneously distributed across the first three subject categories (18, 17 and 15 titles, respectively). Social sciences are represented only by 6 journals.

An analysis of the content and citation of Bulgarian journals present in Scopus can provide an indication regarding their standing in this database. Thus, 8 journals, though

² This information was obtained in May 2017

demonstrating a rather good retrospection, show no citations; 3 more journals reveal a very low level of citation. In other words, 11 journals (25%) have CiteScore indicators varying from 0.000 to 0.05. 7 Out of 8 journals having no citations are published in Bulgarian. 8 Journals cover medical sciences, 5 out of which are published by the Medical University of Sofia (Meditsinski Unversitet-Sofia).

Table 1 displays top-10 most cited Bulgarian journals, with a new-for-Scopus journal showing the highest indicators (CS 3.60). All well-cited journals are published in English, except for one that is published in Spanish and English. All the journals from this list, except for two (BioRisk and NeoBiota), are included in JCR WoS, i.e. have an impact factor. NeoBiota is included to WoS CC, but has not received an impact factor yet. According to this data, the publisher of open-access journals Pensoft Publisher (<https://pensoft.net>) can be considered the most successful Bulgarian (or sooner, international) publisher. This publisher's journals constitute 80% of this list.

Table 1. Top-10 most cited Bulgarian journals, according to Scopus data

Title	Coverage Period	Article language	2016 CiteScore	2016 SJR	2016 SNIP	Open access status	Publisher's Name	Country
MycKeys	2015-ongoing	ENG	3.60	1.148	0.893	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
Fractional Calculus and Applied Analysis	2011-ongoing	ENG	2.18	1.372	1.492		Walter de Gruyter GmbH	Germany
Nature Conservation	2012-ongoing	ENG	1.87	1.041	0.987	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
BioRisk	2011-ongoing	ENG	1.80	0.526	1.011	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
Comparative Cytogenetics	2010-ongoing	ENG	1.36	0.494	0.804	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
PhytoKeys	2014-ongoing	ENG	1.08	0.522	1.067	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
ZooKeys	2009-ongoing	SPA, ENG	1.04	0.527	0.919	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
Zoosystematics and Evolution	2008-ongoing	ENG	0.96	0.388	0.945	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria
Journal of Hymenoptera Research	2007-ongoing	ENG	0.86	0.418	0.839	DOAJ/ROAD OA	International Society of Hymenopterists	USA
NeoBiota	2015-ongoing	ENG	0.71	0.267	0.230	DOAJ/ROAD OA	Pensoft Publishers	Bulgaria

According to the Ulrichsweb Global Serials Directory data (<http://ulrichsweb.serialssolutions.com/>), Bulgaria currently publishes about 250 scientific journals, 148 of which claim to be peer-reviewed. Even if an assumption is made that all Bulgarian journals are included in Ulrich's (which seems most unlikely), then only one fifth of them (one third of all peer-reviewed) are represented in Scopus. A

logical conclusion would therefore be that, for Bulgarian science to achieve higher visibility and standing in the global scientific community, a larger number of Bulgarian journals should be present in Scopus, particularly in those subjects that are not covered by Bulgarian researchers in international journals.

As it has been mentioned above, Scopus is continuously expanding its content by including new titles. When the database was launched, it indexed just over 13,000 journals, with this number having approached 22,700 by now. During the 2011-2015 period, Scopus CSAB (Content Selection & Advisory Board) experts reviewed 5,411 journals and accepted 2,587 (48%) of them (Steinginga, 2017). It means that the CSAB board members review about 1,000 journals annually. For a journal to be accepted into Scopus, it should meet specific selection criteria (http://www.elsevier.com/solutions/scopus/content/content-policy-and-selection#journal_selection_criteria). The CSAB is made up of independent subject matter experts, being specialists in their narrow subject fields and, in most cases, chief editors of journals (or other titles – yearly and reference books, etc.), review journals submitted for inclusion into Scopus. In total, the CSAB lists 17 board members (<https://www.elsevier.com/solutions/scopus/content/scopus-content-selection-and-advisory-board>) from different countries (the UK, USA, Hong Kong, India, Greece, the Netherlands, Germany, Australia, Italy). Moreover, four countries (Thailand, Republic of Korea, Russia and China) have regional (local) expert committees – Expert Content Selection and Advisory Committees (ECSAC) – that run a preliminary journal expertise (<https://www.elsevier.com/solutions/scopus/content/local-content-boards>). The final decision about a journal its acceptance/rejection into Scopus is always taken by the CSAB board members.

Thus far, 153 Bulgarian journals have met the Scopus selection criteria and were accepted into Scopus by the CSAB. 30 Journals have applied for Scopus indexing recently and are currently listed as “newly suggested”, meaning CSAB review is to start still. Out of all journals that have applied, 68 failed to meet the minimum eligibility criteria and were not allowed for subsequent review (see details further). Out of 53 reviewed journals, 20 were accepted and 33 were rejected.

3 Categories and Criteria of the Scopus Expert System

For a journal to be accepted into Scopus, it should be prepared in accordance with Scopus acceptance (eligibility) criteria (in other words, with international standards). The application is submitted online through the website <http://suggestor.step.scopus.com/suggestTitle/step1.cfm>. Then the journal is reviewed by CSAB (in Russia and other three countries, where local expert boards function, journals come through three expertise stages). It should be noted that before the journal is sent for review, Scopus (Elsevier) specialists check whether it meets all minimum criteria, which are detailed on the first page of the application form (see a link to the application form above). The minimum (eligibility) criteria include the following:

- The title should publish only peer-reviewed content, with the details of the peer review process to be given on the journal’s website;

- The title should be published on a regular basis and have an ISSN that has been confirmed by the ISSN International Centre;
- Each published paper should have a title and abstract in English;
- The title should have references in Roman script;
- The title should declare publication ethics and publication malpractice statements, with the detailed information to be given on the journal’s website.

In case the journal fails on any of the listed criteria, it will not be allowed for subsequent review. Since the journal website is the key source of information about the journal, its poor quality can become a reason for application rejection. The introduction to the application form also states that the journal applying for inclusion in Scopus should be older than 2 years.

One of the most important sections that every journal suggested to Scopus should have is a section stating the responsibility borne by all participants of the publication process – authors, reviewers, editors, publishers and shareholders – for adhering to ethical norms. This topic deserves deeper consideration; here, for the sake of brevity, we just mention that this section should be based on the principles and codes of the Committee on Publication Ethics (COPE), <https://publicationethics.org>, as well as the recommendations given by Elsevier (Scopus Team) – Publishing Ethics Resource Kit (PERK) for editors (<https://www.elsevier.com/editors/perk>). Violation of publication ethics can result in the suspension of this journal from the database. The list of suspended journals is updated regularly on the Scopus website (<https://www.elsevier.com/solutions/scopus/content>, Scopus Discontinued Sources List). 4 Bulgarian journals published by Hikari Ltd have been discontinued due to “publication concerns”.

Journals that have been checked for compliance with the minimum criteria then follow through preliminary-to-the-expertise stages performed by the Scopus Team employees. The applicant can track their application by Tracking ID on the website Title Evaluation Tracking (<http://suggestor.step.scopus.com/progressTracker/>). The final decision is also accessible here, after the review has been completed.

After all the preliminary stages, the journal is forwarded to a CSAB board member for review. The journal is assigned to the board member who is the subject matter expert of the first subject field that the applicant identified in the application form. The Scopus title selection criteria consists of 5 categories and 14 criteria; the CSAB board members apply these criteria to evaluate journals (<https://www.elsevier.com/solutions/scopus/content/content-policy-and-selection>). Table 2 presents these categories and criteria.

Inability to meet these standards make such journals ineligible for Scopus.

The most common shortcomings that prevent titles from inclusion into Scopus involve their local character, i.e. local editorial boards and authors (which means the dominance of authors – researchers affiliated with the journal’s establisher); too narrow subject field (“locality”, focus on the readership restricted to that region); poor metadata quality (abstracts, primarily); inconsistency with international standards; low citedness of the journal’s content in international databases; low scientific quality of the content.

In addition, as it has been mentioned above, all the information about the journal should be presented on an English language website. It is also of importance for all

titles to comply with international publication standards; this guarantees accurate extraction of journals' data, correct description of papers and references, formation of authors', organizations' and journals' profiles and allows comprehensive information about publication activity in all countries to be obtained.

Table 2. Categories and Criteria of the Scopus Title Evaluation Platform (STEP)

Category	Criteria
Journal Policy	Convincing editorial policy
	Type of peer review
	Diversity in geographical distribution of editors
	Diversity in geographical distribution of authors
Content	Academic contribution to the field
	Clarity of abstracts
	Quality of and conformity to the stated aims and scope of the journal
	Readability of articles
Journal Standing	Citedness of journal articles in Scopus
	Editor standing
Publishing Regularity	No delays or interruptions in the publication schedule
Online Availability	Full journal content available online
	English language journal home page available
	Quality of journal home page

In preparation of a title for inclusion in Scopus, all the activity of the editorial board should be aimed at both improving its scientific quality and developing awareness of and compliance with publication standards followed by international scholarly journals (Scopus Content Coverage Guide. Updated Jan. 2016) (Scopus Journal FAQs, 2014) (Dembowski, 2015) (Kirillova, 2013) (Kirillova, 2016a). The positive experience of other countries, including Russia that has increased the number of its Scopus journals by 30% over the past two years, proves that this task is undoubtedly achievable (Kirillova, 2016a). These results could not have been achieved without a state programme for supporting Russian scientific journals aimed at promoting them to the international level (Kirillova, Kuznetsov, Dimentov, Lebedev, & Shwartsman, 2014) (Kirillova, 2015b) (Kirillova, 2016b), as well as the efforts of the Russian Association of Scientific Editors and Publishers (<http://rasep.ru>) (Kirillova, 2015a) and Russian local board - Expert Content Selection and Advisory Committees (ECSAC) (<https://www.elsevier.com/solutions/scopus/content/local-content-boards>). It seems that implementation of Russia's positive experience might help other non-English speaking countries, including Bulgaria, facilitate the advancement of their national journals and inclusion of the best of them into the esteemed information resources Scopus and Web of Science.

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