

## **The Impact of National Citation Indexes in the Research Evaluation Process: Development of Bulgarian Citation Index (Social Sciences)**

**Milena Milanova,<sup>1</sup> Bilyana Yavrukova<sup>2</sup> and Elitsa Lozanova-Belcheva<sup>3</sup>**

<sup>1</sup> Associated Professor Ph. D., Sofia University "St. Kliment Ohridski", Faculty of Philosophy

<sup>2</sup> Ph. D., Sofia University "St. Kliment Ohridski", Sofia University Library

<sup>3</sup> Associated Professor Ph. D. Sofia University "St. Kliment Ohridski", Faculty of Philosophy

**Abstract:** The article outlines the problems related with the lack of an integrated national database for all scientific disciplines in Bulgarian research field. The authors present the results of a research study which focuses on various practices in Bulgarian academic libraries as examples of partially resolving the problem with citation tracking and discuss the changes in the Law for development of academic staff in the Republic of Bulgaria and evaluation of the quality of scientific activities. Results of scientific project "Design and Development of a Prototype of the Information System „Citation Index of Publications by Bulgarian Authors (Social Sciences)"<sup>1</sup> which are discussed at the article's exposition give more attention to the need of establishment of a national citation database connected not only with the research evaluation process on a national level but also playing an important role for shaping of the country profile in the global scientific environment.

**Keywords:** Bulgarian Citation Index; Citations tracking; Citation Indexes; Scientometric; Social Sciences.

### **1. Introduction**

The rapidly changing environment of scientific communications and the provision of new opportunities for dissemination of scientific publications have increased the opportunities but also the requirements for researchers and their works. An undisputed fact is that in recent years the trend towards scientific

---

<sup>1</sup>The article is a result of the project Design and Development of a Prototype of the Information System "Citation Index of Publications by Bulgarian Authors (Social Sciences)" (Contract № DN 15 / 11.12.2017), funded by the National Science Fund of Bulgaria (Ministry of Education and Science).

excellence has been driven by scientific metrics, mostly related to citation information from international databases (mostly English-language) such as the Science Citation Index (Web of Science - WoS) and Scopus. And this affected the evaluation of the scientific production with national importance especially on languages with non-Latin writing systems because most of them are not presented at the international citation indexes. As result the indicators in research fields of national importance have been distorted, and therefore national indexes have been developed in many countries to support the research evaluation process, and most of them starting indexing publications in social sciences and humanities (SSH).

The Bulgarian case is similar and those problems are particularly relevant and significant. In the realm of exact sciences, natural sciences and technical sciences, the citation of the publications of Bulgarian researchers could be identified by foreign scientific databases. But in the field of social sciences this is difficult to apply and in a number of thematic sub-areas - not applicable (for example related to national identity or the protection of national interests).

The authors point out that this is a significant obstacle to the dissemination of scientific results of Bulgarian scientists, as well as to maintain a high level of their scientific prestige. In fact, although that the literature review shows that there are sporadic examples there is currently no established practice in Bulgaria for citation and publications tracking in the field of SSH. Several attempts have been made in the Bulgarian scientific information and library practice to create citation indexes for specific scientific fields and disciplines but not to develop a national citation index that reflects the in book and in article bibliographies to the publications of Bulgarian authors.

## **2. Limitations and exclusions**

The research study is based on results from the three-year project (2017-2020) „Design and Development of a Prototype of the Information System „Citation Index of Publications by Bulgarian Authors (Social Sciences)” (shortly “A Prototype of Bulgarian Citation Index”) which is underway at the Sofia University „St. Kliment Ohridski”. The aim of the project is to create a model and system software prototype for identification and processing of the Bulgarian scientific publications in social sciences. The goal to be achieved is the validation of data for citations and citing authors, as well as additional processing of data for references and citation reports (Harizanova et al. 2019).

The implementation of the project involved the implementation of five work packages (WPs), four of which are directly related to the problem, and one is dedicated to project management (organization, monitoring, control, accountability, dissemination of results and publicity, audit). The WPs are as follows:

- Work package 1 (WP1)- Identification, description and analysis of Bulgarian practices related to the Citation Index

- Work package 2 (WP2)- Identification, description and analysis of foreign practices related to the Citation Index
- Work package 3 (WP3) - Design of Citation Index for scientific publications by Bulgarian authors (in Bulgarian)
- Work package 4 (WP4) - Development of a prototype of an information system “Citation Index”
- Work package 5 (WP5) - Project management

The work packages will be implemented in two phases:

- Phase 1 - Study and analysis of results (WP 1, WP 2, WP 5)
- Phase 2 - Information system design and prototype developing (WP 3, WP 4, WP 5).

The article is focused on the results from WP1 and WP3, because they present data that clearly outline the problem areas related to the research evaluation process in Bulgaria however, the results of WP2 also affected the analyzes.

### **3. Research methods**

As a part of the research team of the Project “A Prototype of Bulgarian Citation Index” the authors have participated in conducting of a complex of empirical methods - desk research, interviews, round tables (discussions), a survey and research methods:

- Analysis of the existing systems for registering and promoting scientific publications by Bulgarian researchers and identifying the optimization needs in relation to increasing the visibility of achievements.
- Analysis of the model for organization and management of digital resources in the academic library network in Bulgaria and identification of the optimization needs in relation to increasing the visibility of the achievements from the publication activity.

#### **3.1. Literature Review**

The discussions about measuring tools indicating the quality of researchers output and the influence of academic institutions is conducted almost when Eugene Garfield established the Institute for Scientific Information and provoked using of bibliometric analysis. The benefits of those instruments are undoubted (Archambault et al., 2006). The purpose of growing the importance of research assessment are closely related to the investments, projects proposals, ranking and monitoring educational institutions (Moed 2005, Harzing 2013, Sile et al. 2017). The significations differences have been occurred between natural sciences and SSH into the process of science outputs evaluations. There are several publications observing and discussing the reasons of those differences: research topics usually are locally and national focused (Archambault et al. 2006, Bornmann et al. 2016); the languages of articles are not “international” (Archambault et al. 2006, Bornmann et al. 2016); the researchers outputs in

widely cases are issued into monographs (Archambault et al. 2006; Harzing 2013, Bornmann et al. 2016). However the attention into SSH, non-English research publications and research output types slowly growing and the leading bibliometrician tools have been expanded (Siversten 2014). WoS databases include KCI-Korean Journal Database, Russian Science Citation Index, SciELO Citation Index (and planned to launch Arabic Citation Index (ARCI) in 2020), but those data are still outside WoS Core Collection (Siversten 2014, Moskaleva et al. 2019).

It is also an indisputable fact that most research publications are not indexing into WoS and Scopus (Moskaleva. et al. 2019) and there are other possibilities for collecting research, bibliographic and bibliometric data. As an alternative for collecting citation data often is recommended Google Scholar (GS) (Harzing et al. 2016). The coverage of database in the field of SSH is considerable, but there are still limitations such as “GS does not supply any information on data sources, document types and time ranges or update frequencies; ... the citations continue to include questionable sources; ... identification and elimination of duplicates” (Bornmann et al. 2016).

Some European countries set up own Current Research Information Systems (CRIS) for collecting, access and preservation of national scientific information or maintained databases and repositories for research output within the SSH. Those systems are very different according data sources, publication types and languages, applied classification systems, quality assurance, citation tracking (Sile et al 2017, Adoojan et al. 2018, Kulczycki et al. 2018).

In Bulgarian scientific landscape in 2018 occurred significant changes. The legislation and regulation concerning the development of the academic staff was supplemented and amended. Under *Article 2b, §2, §3 from Law on the Development of the Academic Staff in The Republic of Bulgaria* (Republic of Bulgaria, 2018) were defined the minimal scientific-metric national requirements. There were a new approach and a new regulation that provoke a lot of discussions, difficulties, and put it also on the agenda some questions and a necessity to find decisions of them.

For the first time, there were defined minimal quantitative indicators that are related to the results from certain scientific activities, e.g. numbers of publications, numbers of citations, numbers of projects, numbers of tutorials, and so on. All those indicators are familiar to Bulgarian scientists and all of them has been always tried to follow good practice related to the development of scientific research. The new rules in the Bulgarian legislation required a more strict and narrow interpretation of evidence of the scientific achievements of every researcher.

The National centre for information and documentation (NACID)<sup>2</sup> was defined as a national institution that maintains Bulgarian CRIS. NACID established and developed Register of academic staff and Register of scientific activities. Those two databases are the tools that would be used for the evaluation of research achievements and recognition. In those registers are collecting information about scientific organizations and universities, researchers, scientific infrastructure, corporate bodies, and individuals were received financial support for scientific projects. Also, there is available information about different competitions for occupying the academic positions, for scientific projects, for international research programs, for monitoring and evaluation of researchers.

According to the *Law on the Development of the Academic Staff in the Republic of Bulgaria* (The Republic of Bulgaria, 2018) every researcher needs to fulfillment minimal scientific-metric national requirements. The information is provided by researchers and the verification has been deputed to the staff of NACID. In the Register of academic staff were collecting data about scientific achievement and occupation of researchers. There are also presented the number of points that are equal to minimal scientific-metric national requirements. The data are open and present the opportunity to find partners for projects, to choose a member for scientific competition, to invite researchers for the editorial board of scientific journals, or as a reviewer of scientific articles. A new and very important point in this register is that for the first time the Ph.D. and doctoral thesis of Bulgarian researchers are accessible as open accessed publications. This is a real step that moved Bulgarian science into open science.

Nevertheless, there are a lot of challenges faced by academics. The minimal scientific-metric national requirements are different depending on the fields of science and technology. This gives opportunities to the correlative evaluation of the achievements of Bulgarian scientists according to the specificity of science. In Bulgarian law are mentioned only two international databases as a highly reliable source for qualitative scientific publication - WoS and Scopus (The Republic of Bulgaria, 2018). Publications indexed in those databases is rated higher than any other publication indexed by other international or national databases without taking into mind that the coverage of SSH papers (especially in non-English languages) is significantly insufficient in WoS and Scopus (Sivertsen 2014). The Bulgarian scientific publications still face the challenge of being included in the leading bibliometrics databases. Of course, there are good examples of some national journals indexed in those databases, but they are the very limited amount and also they are not included into core collections. For example, only 15 Bulgarian journals in field of SSH are included into Emerging Sources Citation Index of WoS<sup>3</sup>.

---

<sup>2</sup> National Centre for Information and Documentation [online]. [retrieved on 28.04.2020] <https://nacid.bg/en/>

<sup>3</sup> Master Journal List.Web of Science Group [online]. [retrieved on 28.05.2020]. <https://mjl.clarivate.com/home>

In support of Bulgarian scientists and to overcome those problems, NACID is obliged to maintain a national reference list of publications. It is available on the NACID website and includes all scientific publications for which has been provided information and has been submitted a request for inclusion. Of course, the issues must meet certain requirements defining them as qualitative editions, for example, reviewing policy, sustainability, editorial board, availability of unique identifiers, publisher information. It should be noted that this list includes all types of publications (journals, books, collections of works, proceedings of conferences) which supposed a constant increase in the numbers of the register and also duplication of information that is accessible and visible in the national bibliography of Bulgaria.

It is especially important for Bulgarian researchers to have a reliable national bibliometric system that enables the registration of Bulgarian scientific publications. This would allow achieving equality at the national level and would create conditions for monitoring the citations of Bulgarian researchers. We do not yet have such opportunities, and it is extremely difficult to collect and present references for different scientific purposes and also it is impossible to determine objective scientific metrics. Different altimetric, such a Google Scholar may be used, but they are not yet sufficiently reliable (Bornmann et al. 2016) and do not cover much of the publications, which, for example, are only available in traditional, printed form. A possible solution is being sought through establishing a national database included current and retrospective research outputs, data from different suppliers (authors, publishers, library specialists, institutional databases) and would offer scientific metrics tools.

### **3.2. Bulgarian Citation Tracking Practices**

The phase 1 (WP1) of the Project “A Prototype of Bulgarian Citation Index” aims to identify and analyze the Bulgarian practices for tracking citations and to collect results to verify the following hypotheses:

- Hypothesis 1 (H1). For the period 1988-2018 various projects have been developed for subsequent citation of Bulgarian authors in separate scientific fields and generation of bibliometric data, but they have not reached realization.
- Hypothesis 2 (H2). For the period 1988 - 2018 there are developed projects for reflection and monitoring of the citations of Bulgarian authors in separate branches of science, which have achieved realization, but they have not functioning at present in separate scientific directions - for example: medicine, technical sciences and others.
- Hypothesis 3 (H3). For the period 1988 - 2018 there are developed projects for reflection and monitoring of citations of Bulgarian authors in certain branches of science, which have reached realization and are currently used by certain scientific fields - for example: medicine, technical sciences and others.

- Hypothesis 4 (H4). In some of the accrediting universities in Bulgaria and institutes of Bulgarian Academy of Science (BAS) there are systems that track the publishing activity of Bulgarian students and have bibliographic information for quoting authorities through the so-called. "Noticed citations" of the authors themselves.

The first research hypothesis (h1) was rejected in the process of identifying the Bulgarian practices and the hypothesis h3 was approved. The main findings from the desk research and the interviews (with Prof. Dr. Hristo Mutafov and Assoc. Prof. D. Tomov who are related to the project idea and realization of the first citation index in the field of medicine in Bulgaria) show that one of the successful projects to create a citation index is that of the Central Medical Library was started in 1993 and it is related to the creating of the automated bibliographic database "Bulgarian Medical Literature" at the Medical Information Center at the Medical Academy - Sofia (CIM, now the Department of the Central Medical Library<sup>4</sup>). Since 1996 it has begun to fill in the "Bulgarian Citation Index of Medicine" database, which was developed and maintained by CIM. The database contains bibliographic information about original scientific articles from all Bulgarian scientific medical journals and collections available in the Bulgarian Academy of Sciences. It is updated on a regular basis and includes articles and reviews by Bulgarian and foreign authors from prestigious Bulgarian journals at university medicine level.

Another identified project related to the idea of maintaining a citation index of Bulgarian scientific publications approves the hypothesis h2. This project initiated in 2012 by the Central Agricultural Library with the topic "Building an efficient system for modern science and information services of agricultural sciences - National Agrarian Science and Information Complex (NANICO). Retrofitting of the complex provides the construction of a "Bulgarian Citation Directory - Agrarian Sciences", through which scientists will be able to receive information about their citations in the Bulgarian periodicals. Unfortunately, work has been stopped due to lack of technical and software support<sup>5</sup>.

As the practice of tracking authors' publication activity and their research works is a common feature of universities and scientific organizations and to approve or reject working hypothesis h4 a survey by the method of direct inquiry was conducted\*. It was entirely faced towards the Bulgarian scientific institutions, in

---

<sup>4</sup> Central medical library [online]. [retrieved on 18.04.2020] [http://cml.mu-sofia.bg/CML/index\\_eng.php](http://cml.mu-sofia.bg/CML/index_eng.php)

<sup>5</sup> Proektüt "Natsionalen agraren nauchnoinformatsionen kompleks" - novi vüzmozhnosti za türsene na informatsiya [online]. [retrieved on 16.03.2020] [agro.bg/news/article14283.html](http://agro.bg/news/article14283.html)

\*The study was circulated among the invitees to the Round table "Presentation of the Citation Activity of Bulgarian Scientists" (March 15, 2018, Sofia) and was conducted online during the period from 15.03.2018 to 20.04.2018.

particular their academic libraries, which are traditionally responsible for the reference and information services of the institution. The study involved the institutes of the Bulgarian Academy of Sciences (BAS), higher education institutions, university libraries, scientific libraries and the total number of respondents was 38. The summary of the results of the study approves the working hypothesis h4 and shows that:

- i. A significant part of the respondents Bulgarian scientific institutions (universities and institutes at scientific academies) - 32 of 38 (84.2%) follow the citation activity of their authors. This is done primarily through the information provided by the authors about the noted citations - 28 (85.5%). The analysis of survey data leads to the conclusion that due to the lack of an appropriate tool for tracking citation activity at national level, different methods and sources among the academic institutions were used. The process of establishing citation activity involves collecting information from authors and from different free or open access sources as Google Scholar Search, Online Libraries (eLibrary.ru, Google Books, etc.) and Social Science Networks such as Mendeley, ResearchGate, Academia.edu, etc .; the scientometric databases - WoS and Scopus and the reviewing “de visu” the potential sources of citation information.
- ii. Some scientific institutions have created their own information systems in which authors have to fill in information about their publications and register noted citations: 1) Information System of the Academy of Economics - Svishtov with an institutional information system in the field of economics and management; 2) SONIX system<sup>6</sup> of Bulgarian Academy of Sciences and 3) Information system "The Authors"<sup>7</sup> of Sofia University "St. Kliment Ohridski". These systems count the number of cited authors / researchers which is useful for the administrative reporting of the research activities of the academic staff in quantitative terms for the various certification and accreditation procedures. But the analysis of those practices shows that it is not possible to identify verified data for citations of publications and to provide bibliometric data. Thus, even if there is an opportunity for further development of these systems, they remain incomplete and without the possibility of verification by bibliographic expert.
- iii. Six (15.8%) of the respondents indicated that the institution of their representatives maintained a citation index of the authors' publications from the institution. Five institutions have a database (citation directory), which is a module of the automated library information system and is completed by the institution's library when cataloging library documents. In this case, the software is AB of Bulgarian Company “PC-TM”:

---

6 SONIX system [online]. [retrieved on 10.04.2020] <http://sur.ly/o/sonix.bas.bg/AA000014>

7 Sofia University “St. Kliment Ohridski”. Information System “Authors” [online]. [retrieved on 16.04.2020] <https://authors.uni-sofia.bg/>



University of Economics-Varna, Varna Free University “Chernorizats Hrabar”, Central Medical Library, University of Architecture, Civil Engineering and Geodesy, Agrarian University-Plovdiv. An institution is developing a quotation directory based on a software package (Microsoft Office).

- iv. Traditionally, the library is not only responsible for providing information but also for reference services. The majority of respondents answers that the institution's library needs to maintain and process the citation directory (54.2% of the respondents), to control and verify the data (52% of the respondents) and to keep the citation directory (66.7% of the respondents).
- v. The results obtained from the study approves h4 and underline the conclusion that the academic libraries in Bulgaria try to come in handy their integrated library systems and to register the publication and citation activities of the researchers affiliated with their institution. Unfortunately, the results are not sufficient and those systems does not calculate metrics. The tools that track the citation, familiarity and dissemination in and international practice of scientific communications show that there are several fundamental barriers to using these resources as unified and valid for all scientific fields, internationally, but at the national level these issues are more complicated and also concerns the specific of a national legislation for the development of the academic staff.

### **3.3. Citation Index Structure**

There are a lot of national citation indexes. Some of them are regional. They confirmed their usefulness for evaluating the researchers' achievements. Good examples are Poland, China, Russia, Malaysia, Japan, etc. Instead of citation indexes in some countries, there are indexes, which evaluate the publication activities of scientists based on data given by scientists or on databases established by universities or scientific organizations like the Norwegian Publication Indicator<sup>8</sup>. The existence of such tools can be used for evaluation of researchers or institutions as well as for their financing. As a result, there is an increase of researcher publications (Siversten 2010) and revealing of their achievements in fields, which are not enough indexed in the big international databases as publications in SSH, written in non-English languages.

Analysis of national citation indexes shows that most of them are created for indexing and tracking of citation activities in SSH. They permit research of priority fields with national impact as have been mentioned by authors who write about the development of national citation indexes (Tret'yakova 2015, Yongyan Zheng et al. 2016). One of the most important advantages of national citation indexes is the possibility of national serials to retain their high quality, because scientific articles concerning relevant for the country research, will be published there. As a result, authors will not publish only in Anglophone serials of the providers of the most popular databases (Bocanegra-Valle 2019).

---

<sup>8</sup>Norwegian Publication Indicator [online]. [retrieved on 28.12.2019] <https://mpi.nsd.no/>

A good structure of the database is a prerequisite for relevant bibliographic and scientometric retrievals. The model of „Citation Index of Publications by Bulgarian Authors (Social Sciences)” (WP3 of the project “A Prototype of Bulgarian Citation Index”) is made on libraries’ experience, which catalogues are created according to approved formats for bibliographic data, standards and rules, which have proven their effectiveness over time.

The two biggest academic libraries in Bulgaria participate in the project. They work with the same library and information software and build their catalogues with one of the most used formats for machine-readable records. The experience of both libraries was examined and the MARC 21 format was chosen for the database. For the index structure are used two of the formats from the MARC 21 format - MARC 21 for Bibliographic Data and MARC 21 for Authority Data. Some of the tags were modified. There were added new tags concerning the references, which aimed to be fulfilled the tasks of the project.

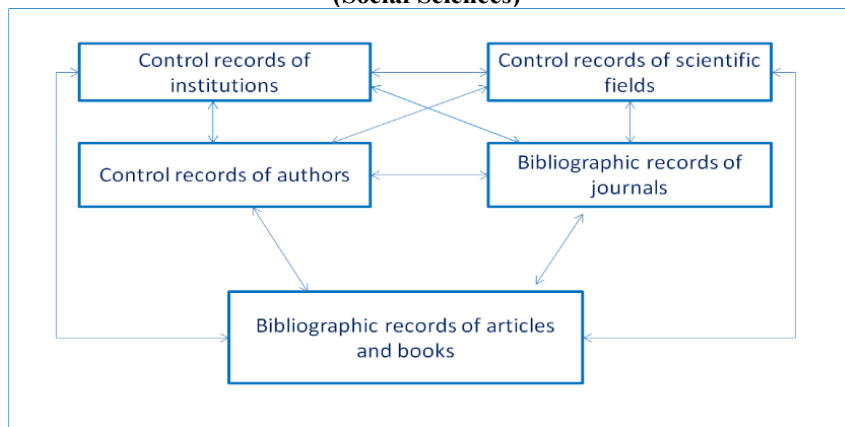
The designed model consists of five logical databases. Some of them consist of authority records, others consist of bibliographic records only:

- Institutions authority records
- Science fields authority records
- Authors names authority records
- Bibliographic records of serials, collections, and conference proceedings, books
- Bibliographic records of indexed publications.

It is very important to be mentioned that the bibliographic records are connected and depend on authority records.

Like the structure of integrated library and information systems all databases in the model are interconnected, ensuring quick and reliable informative, bibliographic and scientometric references. This permits, as in most similar databases, to be summarized information about an institution, an author, a serial, a scientific field as well as it guarantees relevant and complete results, which does not depend on spelling. Thus, can be found all publications of the authors affiliated to an institution, the serials where they have published and citing statistics for each author’s publication.

**Fig. 1 The model of „Citation Index of Publications by Bulgarian Authors (Social Sciences)”**



The model stipulates the link between different types of records to be made through certain tags, which require authority control. One of the main problems of the existing scientometric databases is the lack of authority control because of the automated indexing of bibliographic data of resources or their references (Araujo and Hjørland, 2019). There is a necessity of several information retrievals to identify all indexed publications and references of an author or an institution. This problem concerns authors, who write in languages, which do not use the Latin script. Sometimes a name can be written in several ways. The same is valid for organization names, like publishers or affiliation institutions.

To be overcome this problem there will be built the following authority files and indexes, which will improve the information retrieval, authority control, and data linking:

1. Authority file of institutions
2. Authority file of authors
3. Authority file of scientific fields
4. Authority file of indexed resources
5. Index of resource titles
6. ISBN index
7. ISSN index
8. Index of institution identifiers
9. Index of authors identifiers
10. Index of scientific fields identifiers

For precise retrieval and to be combined all name variants are envisaged authors and institutions standard identifiers. Thus, all data will be unified and the relevancy of the results will be better. Identifiers like ORCID and other may be included. If an author has several identifiers, they will be added in the records

and users will be able to retrieve them. Serials and books will be identified with International Standard Serial Number and International Standard Book Number and online publications and articles with DOI.

The first step for implementing the model is to create a prototype, where will be tested the logical links. It will provide the ability to calculate metrics related to citations by authors, institutions, serials, etc.

### 3.4. Transliteration

Transliteration of authors' and institutions' names is one of the major challenges for the project team. The question is very important and concerns the Cyrillic script. It was discussed in many scientific publications, which search for a universal solution. Its essence is based on the fact that some special letters from the Cyrillic script can be transliterated in Latin with several letters according to the used transliteration schema. The example reveals how one letter can be transliterated in four different ways. There is a Transliteration Law in Bulgaria<sup>9</sup>, but there is a UNESCO table for transliteration, which is used for decades by Bulgarian libraries. Some of the scientific fields have developed their rules, which they use when write or cite in English, German, French, etc.

**Table 1. Example for a Cyrillic character transliteration**

ч	ch	ts	č	C
---	----	----	---	---

So some names can be spelled in several ways. Sometimes one name can be spelled in more than 10 variants.

The database will include publications in Bulgarian but there will be and references in Russian, Serbian, Ukrainian and other languages, which use the Cyrillic script. The problem will become more complex because the alphabets of these languages include additional letters, diacritic letters and letters borrowed by the Latin script like ы, э, ъ, љ, њ, і, ї, etc. Each of these languages has its own transliteration schemas, often different in the transliteration of special letters.

The team of the project developed in detail all existing transliteration variants of all Cyrillic letters included in the alphabets of Slavonic languages. They will be incorporated into the index software in order to facilitate and unify the data entry and verification process.

This is one of the main roles of control files, which are useful tools permitting unification of all name variants. Regardless of the spelling, if the variant is

---

<sup>9</sup>Zakon za transliteratsiya [online]. [retrieved on 03.01.2020] <https://www.lex.bg/laws/ldoc/2135623667>

included in the authority record, users will reach the requested name of an institution or an author.

The possibility to be retrieved all possible author name variants will provide the possibility for scientometric references which cannot be achieved in other databases. Our experience proves that there are significant difficulties in retrieving Bulgarian authors. The indexed and cited publications of one author are not gathered. Sometimes the librarians must browse a lot of records to find citations of authors, which have a lot of name variants. In the offered model this obstacle will be overcome.

To be facilitated the data input process it will be recommended to publishers of Bulgarian scientific serials to transliterate the references according to the Transliteration Law. The preferred variant of institution names and author names will be according to it.

### **3.5. Librarians, publishers and authors in collaboration – practical implication of the research study**

During the Project were organized three meetings with librarians, publishers, and authors. They are part of scientific communication. The first attempts for establishing citation indexes were made with librarians. They approved the importance of the existence of a Bulgarian citation index.

The academic librarians stated their willingness to participate in the process of current and retrospective data entry, which will be one of the most time-consuming tasks in the process of index development. Unfortunately, a few of the libraries have catalogued the articles from the serials, published by their affiliated institution. A few are those which reveal all references of these publications. One of the input methods in the prototype is developed for librarians, who will be responsible for the authority control of the data.

Publishers and editors were invited to the second meeting. Most of them were scientists in SSH. There were representatives from the Ministry of Education and Science of the Republic of Bulgaria. The meeting was held in the midst of discussions and criticism of the new Law on the Development of the Scientific Staff in the Republic of Bulgaria and the Rules for its implementation, which give priority to publications of Bulgarian scientists indexed and cited in the two biggest databases WoS and Scopus. There were pointed out the problems about reporting scientific work and the necessity of a tool, which can show publications and citations of Bulgarian authors in Bulgarian language. The publishers are ready to provide full-text Bulgarian serials, which will facilitate the input data process. One of the input methods will be for publishers who can provide the data themselves, which will facilitate the process.

The last but the most important meeting was with authors. It was attended by official representatives from the Ministry of Education and Science. The model

and the first variant of the prototype of the database had positive feedback. The most important result from the meeting was the promise of the Ministry to finance the development of the prototype and turning it into a National Citation Index in the next two-three years. It will be used for the evaluation of researchers and institutions and in the process of academic growth. This is one of the most used financing models for the establishment and development of a national citation index.

The meetings confirmed the necessity of a national citation index, which will objectively present the achievements of Bulgarian researchers and will provide a reliable assessment of their work. The scientists will rely not only on foreign databases, which index mainly Anglophone literature, but on a Bulgarian database, which will index Bulgarian publications.

The model, which we present has a universal structure established according to the international standards for bibliographic databases. The project designed a universal model, which can be upgraded and can include publications in all scientific fields.

#### **4. Conclusions**

The project is in direct connection with the updated Bulgarian National Strategy for Scientific Research 2030<sup>10</sup> by the Ministry of Education and Science of Republic of Bulgaria, as well as with the regional, national and European priorities for the development of scientific research. It is contributed to an effective national science policy that creates the conditions and sets out perspectives for the achievement of the tasks set by the Europe 2030 Strategy; providing access to data and information to analyze problems and formulate measures to address them; transforming Bulgarian society into a "knowledge society" and ensuring higher quality and visibility of research and innovations, including creating an appropriate environment and encouraging businesses to invest in research.

Through the design and development of the system "Index of citations of publications of Bulgarian authors (social sciences)" will overcome the lack of correct data on the publication activity and the real scientific achievements in the field of social sciences, the information will be available not only from the international databases, but will be taken into account and that of the Bulgarian database. The same will significantly improve both the analysis of the current state of operational decisions and measures and the possibility of planning future development.

---

<sup>10</sup> National strategy for development of scientific research in the republic of Bulgaria 2017 – 2030 [online]. [retrieved on 12.03.2020] [https://www.mon.bg/upload/6527/SSstrategy\\_2030\\_BG.pdf](https://www.mon.bg/upload/6527/SSstrategy_2030_BG.pdf)

The project is in line with the guidelines for supporting scientific research because it leads to:

- Creating new scientific knowledge as it reveals already published achievements and supports their implementation in subsequent developments;
- Disclosure of Bulgarian history, language, culture and national identity through the development of an expert assessment database with publications of Bulgarian researchers in this field;
- Promoting technology transfer and development of natural sciences, technical sciences, SSH and innovation through innovative solution for citation index based on the latest technologies;
- Solving important problems in the fields of economics, education, agriculture, ecology, social processes, human resources, security, defense and health by building a unique citation index with a wide application (both for the needs of the researchers themselves, for the needs of the governing bodies in the system of science, education, and for the needs of the business through access to the quality assessment of a given publication).

#### **References**

- Adoojan, M., Tsoukala, V., Dechamp, J.-F. (2018). *Access to and preservation of scientific information in Europe. Report on the implementation of Commission Recommendation C(2012) 4890 final – Study*. Luxembourg: Publications Office of the European Union, 91 p. doi: 10.2777/642887
- Araujo, Paula Carina de, Renata Cristina Gutierrez and Birger Hjørland, (2019). Citation indexing and indexes. *Encyclopedia of Knowledge Organization* [www.isko.org/cyclo/citation](http://www.isko.org/cyclo/citation)
- Archambault, É., Vignola-Gagné, É., Côté, G. et al. (2006). Benchmarking scientific output in the social sciences and humanities: The limits of existing databases. *Scientometrics*, vol. 68, pp. 329–342. <https://doi.org/10.1007/s11192-006-0115-z>
- Bocanegra-Valle, Ana, (2019). Building a Reputation in Global Scientific Communication : A SWOT Analysis of Spanish Humanities Journals. *Canadian Journal of Sociology*, vol. 44, no 1, pp. 39 – 64.
- Bornmann, L., Thor, A., Marx, W. and Schier, H. (2016). The application of bibliometrics to research evaluation in the humanities and social sciences: An exploratory study using normalized Google Scholar data for the publications of a research institute. *JASIST*, vol. 67, no. 11, pp. 2778-2789. doi:10.1002/asi.23627
- Harizanova, O., Angelova, A. and Yavrukova, B. (2019). Contemporary problems in reporting the effectiveness of scientific results – Scopus, Web of Science and the national citation indexes. *Bibliotekar, Belgrad*, vol. 1, 9-22; ISSN 0006-1816
- Harzing, A.W. (2013). A preliminary test of Google Scholar as a source for citation data: A longitudinal study of Nobel Prize winners, *Scientometrics*, vol. 93, no. 3, pp. 1057-1075.
- Harzing, A.W., Alakangas, S. (2016). Google Scholar, Scopus and the Web of Science: A longitudinal and cross-disciplinary comparison, *Scientometrics*, vol 106, no 2, pp. 787-804.

- Kulczycki, E., Engels, T.C.E., Pölönen, J. *et al.* (2018). Publication patterns in the social sciences and humanities: evidence from eight European countries, *Scientometrics*, vol. 116, pp. 463–486. <https://doi.org/10.1007/s11192-018-2711-0>
- Moed, H. F. (2005). Citation Analysis in Research Evaluation. Proceedings of the *ISSI 2005 – the 10th International Conference of the International Society for Scientometrics and Informetrics*, vol. 2, pp. 437-441.
- Moskaleva, O and Akoev, M. (2019). Non-English language publications in citation indexes – Quantity and quality. Proceedings of the *17th International Conference on Scientometrics and Informetrics ISSI*, pp. 35-46.
- Republic of Bulgaria (2018). *Law on the Development of the Academic Staff in the Republic of Bulgaria*. [online]. [retrieved on 28 April 2020] <https://www.lex.bg/laws/ldoc/2135680028>
- Sile, L., Guns, R., Sivertsen, G., Engels, T. (2017). European Databases and Repositories for Social Sciences and Humanities Research Output. *figshare. Journal contribution*. <https://doi.org/10.6084/m9.figshare.5172322.v2>
- Siversten, Gunnar, (2010). A Performance Indicator Based on Complete Data for the Scientific Publication Output at Research Institutions. *ISSI Newsletter*, Vol. 6, N 1, 22 - 28. <http://issi-society.org/media/1125/newsletter21.pdf>
- Sivertsen, G. (2014). Scholarly publication patterns in the social sciences and humanities and their coverage in Scopus and Web of Science. Proceedings of the *Science and technology indicators conference 2014 Leiden*, pp. 598–604.
- Tret'yakova, O. V., (2015). Development of national citation index as a condition for the formation of a system to evaluate scientific research performance. *Economic and Social Changes : Facts, Trends, Forecast*, Vol. 37, N 1, 230 - 245. DOI: 10.15838/esc/2015.1.37.15
- Yongyan Zheng, Andy Xuesong Gao, (2016). Chinese Humanities and Social Sciences Scholars' Language Choices in International Publishing: A Ten-year Survey. *Journal of Scholarly Publishing*, Vol. 48, N 1, 1 – 16.