

Making of the Ukrainian Scientometrics: History Journal Ranking



Andrii L. Pilkevych, Victoriia O. Pilkevych

Abstract: *History as an Academic Subject is in crisis of a traditional paradigm, information technologies have transformed the world into the phenomenon of information society. The article is devoted to the problem of creating a specialized database of Ukrainian scientific journals (History studies). Author moderately criticizes the traditional methods of scientometrics. Generally, journal impact factor (Clarivate Analytics) and CiteScore (Elsevier). The specifics of inapplicability are based on main problem which flows to the fact that citation on the history of Ukraine (and number of local history problems) will be deliberately so low since it is less interesting for the scientific community of other countries. Since the creation of any Bibliometrics is based on the collection and addition of materials to the database, the main attention is focused on the definition of Content management systems for their further integration into History journal ranking frame. Our purpose is to define of CMS types and further writing of the corresponding software significantly optimizes the work of operators. For determination of CMS we analyze the HTML code of the web-pages. It is paid attention to consider the place of historical disciplines in the system of Ukrainian science according to Register of scientific journals of Ukraine.*

Keywords: *Bibliometrics, Scientometrics, Journal impact factor, CiteScore, Register of scientific journals of Ukraine, Content management systems.*

I. INTRODUCTION

The modern super-dynamic development of information technologies has led to the emergence of new paradigms of history studies. The specifics of this stage of historical science development is the phenomenon of information society. This was followed by significant changes in university courses as well as their optimization and reduction. Information technologies has transformed the world of the traditional approach to history because automated systems have significantly accelerated data processing. Research-type of database management systems are of unique value in connection with the possibility of internal search into professional categories.

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Generally, every historian knows that the development of the Information Society leads to a rapid loss of relevance of traditional models for the preservation and transmission of historical content. Superiority in a competitive environment is determined by a quick and relevant search for the necessary information. New features save our time and do not involve traveling thousands of kilometers for data verification. 4G broadband cellular network allows you to search and verify information as quickly as it possible.

Despite of a certain criticism of scientometrics, in general, it performs quite important functions [1]. Changing objectives in response to changes in the external and internal environment of information field leads inevitably to the question of the ability of historians to work with current software. For office work, the clear leaders are a series of software applications for Microsoft Windows, Mac OS, Android. For the implementation of more complex goals, for example, to start the server hardware for local or online community, mostly, you need to get acquainted with a family of open source operating systems as Linux. Today, a huge number of services provide opportunities for exchanging information, actual trends monitoring, choosing partners for implementing joint projects, for multidisciplinary research and international teams, for managing and sharing research papers [2]. For example, besides traditional abstract databases and scientific citation indexing service such as Scopus (Elsevier's SCImago Journal Rank, CiteScore, Source Normalized Impact per Paper), Web of Science (Web of Knowledge) by Clarivate Analytics (previously Thomson Reuters), Ulrich's Periodicals Directory and Index Copernicus - today we have advanced modules which include web programs for managing and sharing research papers (Mendeley).

The list of important and actual computer programs is changing so quickly that universities graduating specialists cannot keep their software knowledge relevant. The creation of program-balanced courses should be combined with directly historical disciplines. Basic work with electronic archives and the creation of thematic information blocks is based on full-fledged controlling of Database Management Systems tools. As for the user use of the main functions of Elsevier's Scopus and Web of Science by Clarivate Analytics, here is a simple user guide as their interface is quite friendly.

At the same time the most important problem facing the historians of Ukraine is creating a national web-resource for scientometric analysis of history studies in the endless ocean of scientific fields.



History is a powerful tool for developing analytical thinking and a unique discipline in the context of understanding the national interests of the state. One of the most striking features of this problem is a criticism of generally accepted Impact Factors which are focused on a number of mathematical, methodological and others problems [3]. Firstly, the same approach cannot be applying to Natural Sciences and Human Sciences equally [2]. Secondly, history of Ukraine unlike the world history not so interesting for the total number of foreign historians and no question about this case - any type of Citation Index will not be relevant. This problem is still actual for scientists in every country. Generally, scimetric algorithms analyze the scientific impact of a journal, relevance, citation and correlation of these indicators over the time.

This research explores the main algorithms and structural components of creating a specialized database of Ukrainian scientific journals (History studies). The main attention is focused on the definition of Content management systems (CMS) for their further integration into History journal ranking frame. Our purpose is to define of CMS types and further writing of the corresponding software significantly optimizes or even removes the work of operators who enter the data for abstract and citation databases.

II. MATERIALS AND METHODS

Scientometrics is a relatively new science in comparison with traditional fields of science. But despite this, it has already successfully developed a number of methodological models and structures. Scientometrics is used to evaluate both quantitative and qualitative scientific indicators of individuals, united groups, teams and large institutions [4]. The results obtained often serve as the basis for the optimization and distribution of financial and other resources. The scientometric evaluations in the field of Humanities are often criticized. We can say that there are no radically new methods for verification and to obtain more objective results, an expert assessment and a review procedure are often used [5]. We should especially note that expert assessments, with their potentially quality, have a high rate of subjectivity. In connection with the growing competition in the scientific community, there is a further intensification of this problem. Of course, there cannot be a universal algorithm, but it has long been clear to everyone that the same principles cannot be applied to all subject areas of science equally. History as a part of the humanitarian structure does not score under the main indicator of measurement since citation here will be deliberately lower [6]. Extensive criticism of scientometric indicators is presented by more than a hundred articles in the leading journal – “Scientometrics” (by Springer in cooperation with Akademiai Kiado) and does not require special attention for this. It is a matter of comparing and indexing practically all the scientific materials of the leading publishers:

1. Elsevier
2. Springer
3. Wiley-Blackwell
4. Taylor & Francis
5. SAGE
6. Oxford University Press
7. Cambridge University Press
8. De Gruyter

9. Peter Lang.

The methodological principles and algorithms for the functioning of similar projects-databases in general do not require special analysis since they are widely represented. The purposes we have defined are completely different as stated above. Since the most difficult task to create a scientometric database is not software interface but content filling the database with thousands of materials from hundreds of websites. Therefore our attention is directed to this problem.

The algorithm of CMS determination is based on the following components:

1. Search for the CMS name directly on the page, often the owners of web resources choose readymade templates for their site (checking of the footer position).
2. The most accurate method is to analyze the HTML code of the web-pages:
 - a) Verification of tag «generator»;
 - b) The upper part of pages code has links to the connection of design files, for example, css and js. Each CMS-engine has characteristic parts that distinguish it from the rest, indicating the usual folder structure. Example for WordPress: /wp-content/themes/
 - c) Service pages (robots.txt) which is responsible for the prohibition of indexing and displaying the technical pages of the site;
 - d) Each site with CMS has its own URL Login Examples for admin panel;
3. Using the online services. Most relevant: Built With and WhatCMS.

III. RESULT AND DISCUSSION

A. Result

The evidence from these studies suggests a variety of factors related to understanding the general trends of using software for scientific journals web resources. As we can see, more than 30% of the analyzed websites of Ukrainian historical journals do not use CMS at all (Table 1). Therefore, single pages formed in the traditional way with the usual design by HTML code. The most popular among the total number of CMS is PHP platform Open Journal Systems by the Public Knowledge Project. OJS Features:

1. OJS is a CMS which specializes in the online presentation of scientific journals.
2. An important feature is a comprehensive set of tools designed for the professional work of reviewers and editors.
3. From online submission to the management of similar work.
4. Accessible and friendly online help support.
5. Linking contacts to the system with the ability to send by email.
6. Quick and easy indexing of submitted content.
7. Structural metadata type of reference definition system.
8. Clear distribution, fast reading and system reliability.

Table 1. The websites analysis of Ukrainian historical journals

CMS software	Number of journals
CMS software was not used	46
Open Journal Systems	37
WordPress	22
Joomla	15
Drupal	8
uCoz	4
Wix	4
SharePoint	3
Google sites	2
Modx CMS	1
Typo3	1
Webnode	1

Second place undoubtedly takes the WordPress. This is a very popular CMS which supports many other types of web content including media galleries and even business solutions.

Used by more than 60 million websites. This content management system has a number of current benefits: customizable designs, friendly SEO, responsive mobile sites, powerful Media Management, high performance and high security. Joomla is the next open-source CMS that takes 10% of the total list. It is one of the most popular software packages. This CMS has a lot of advantages. Firstly, combining usability with deep structuring for more professional content management and widespread (nearly 2 Million active websites). Joomla's benefits are a flexible system - easy to extend and customize, free forever Open Source software, powerful PHP applications that will take it to the next developer level. In particular, it is an extended developer documentation, microdata library implementation, secure coding and extend further with the Framework.

As we can see from the diagram (Fig. 1), other CMS: Drupal, uCoz, Wix, SharePoint, Modx CMS, Typo3 and Webnode take up very small proportion what makes writing software for their processing not entirely attractive.

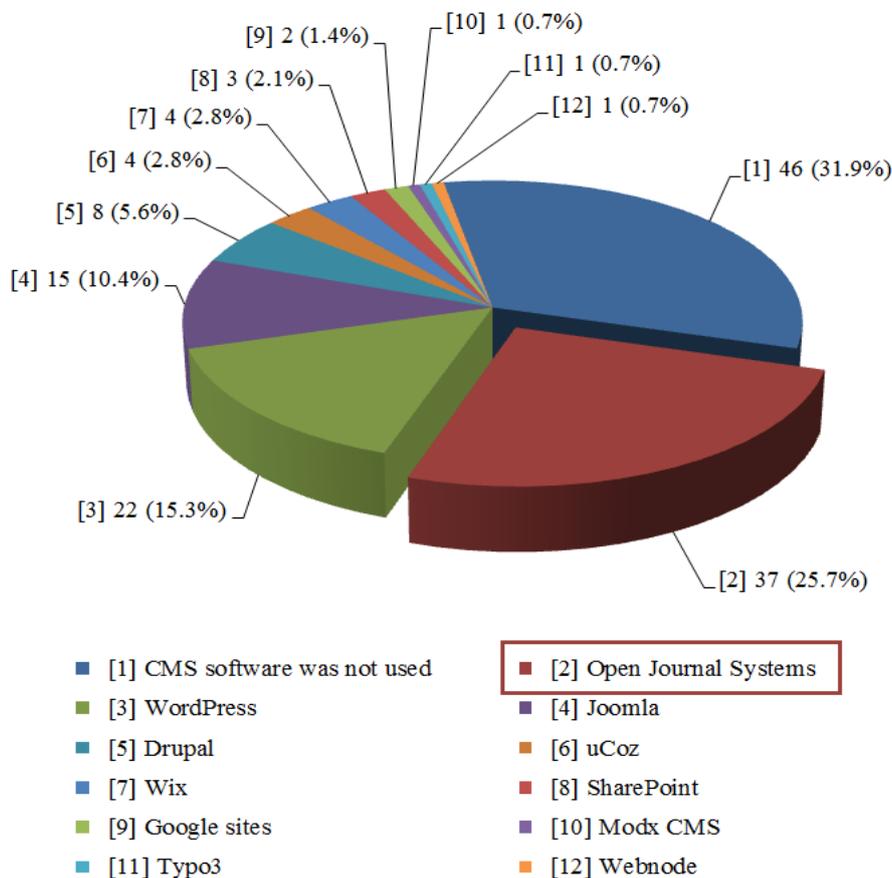


Fig. 1. Content management systems software

B. Discussion

The *History journal ranking* aims to promote new approaches to the modern study of historical topics. Creating a base for maximum digitalization of historical content and analysis of models for its use. The question of creating the particular databases for specific sciences is becoming increasingly important from year to year. The national scientific program of a number of states will clearly identify priority research areas. In this connection, National history studies do not have a practical business effect, but are

extremely important as fundamentalist studies. History is what that defines a nation. History is the identity of a nation. Of course, we have a challenge of comprehensive coverage of even old scientific materials, because it is important to recreate the most reliable metrics for years. It is important to emphasize that this is one of the most important features of history as a science. In fact, it might well be the most important thing of all.

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How the citizens of Ukraine view that country and its place in the past can have profound consequences for the politics of that country or its future existence. We cannot ignore the fact that history studies significantly different from other disciplines and requires a special approach in the process of creating *History journal ranking* scientometrics. It is important to consider the place of historical disciplines in the system of Ukrainian science. According to Register of scientific journals of Ukraine [7] the part that interests us is the quite low (6.6%) which makes this mission realistic

enough even with the expense of very limited resources (Fig. 2). Further, it may be appropriate to integrate a historical database into humanities (Fig. 3).

Also, one of the most striking features of this problem is the discrepancy in traditional metric approaches to similar databases. Basically the best description we have from Judit Dobránszki and Jaime A. Teixeira da Silva. The authors mentions that *metrics can be divided into 2 groups, journal-metrics and author-metrics* [8].

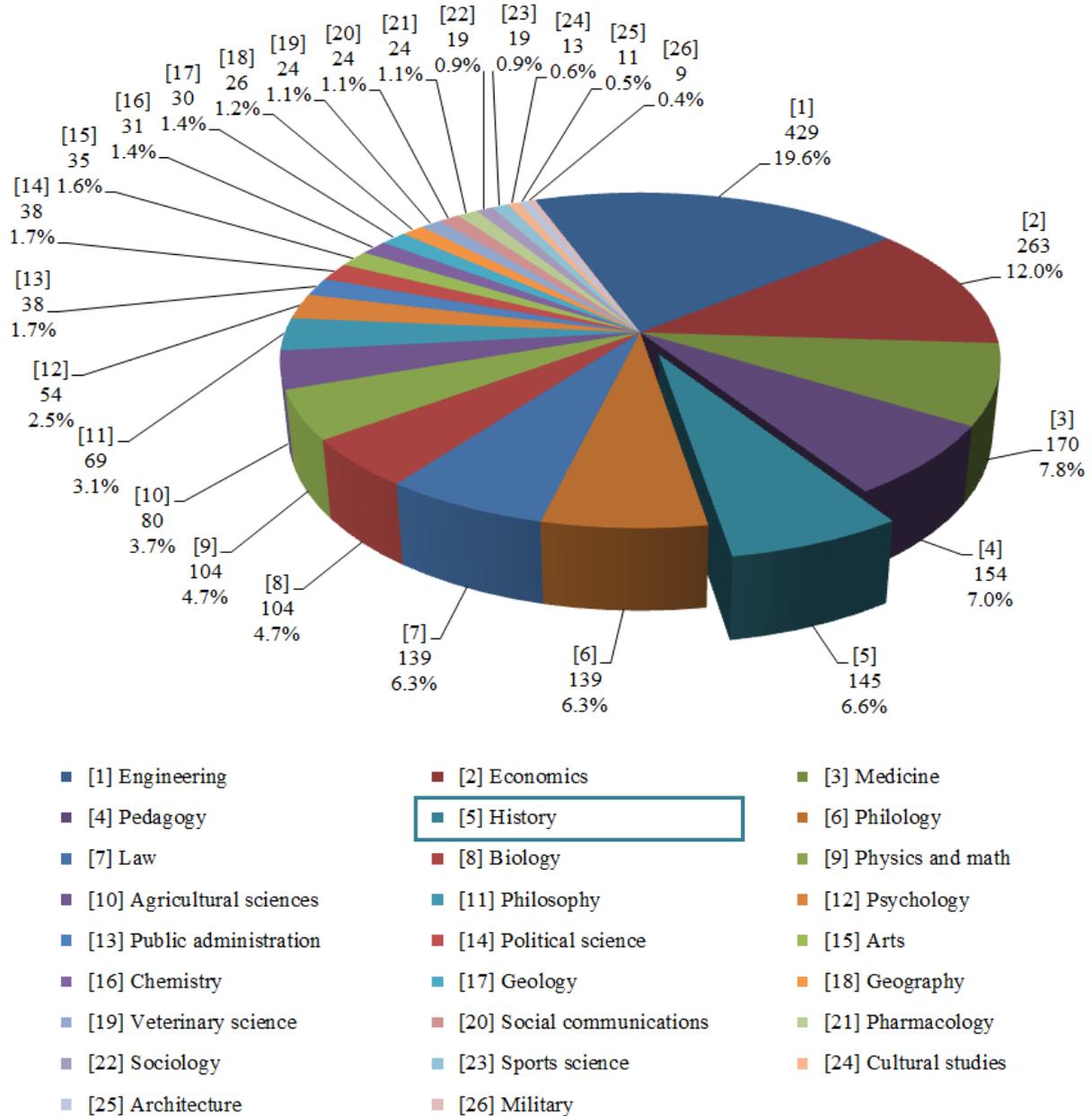


Fig. 2. Scientific journals of Ukraine in all subject areas

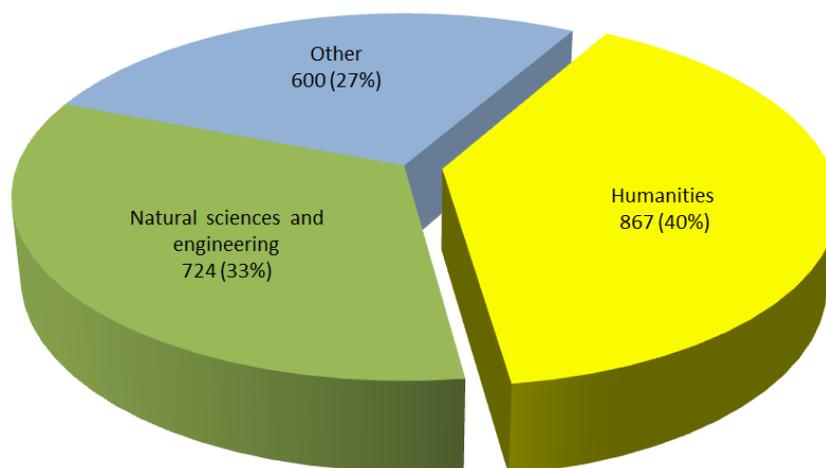


Fig. 3. The part of Humanities journals in Ukraine

We can say that the most global JBM is the Clarivate Analytics journal impact factor (JIF). The CiteScore (Elsevier) is actually the main competitor of the JIF. In fact, the two indicators have very strong positions and it is methodologically difficult to give primacy to someone specifically. The CiteScore (Elsevier) is gaining strength and is already ahead of the JIF in many aspects. CiteScore more transparent than JIF, applies a longer evaluation period and available for free access. CiteScore is constantly expanding the categorial and content database. Truly, these two indicators have incorporated the whole genius of modern developments in the field of scientometric [8], [10].

CiteScore is one of the main indexes used in Scopus. It is represented by the following formula:

$$CiteScore = \frac{Citation\ Count\ A}{Documents\ B - C}$$

where *A*, *B*, *C* are years such that:

- *A* is the year for which CiteScore is calculated,
- *B* = *A* - 3,
- *C* = *A* - 1.

For example, for CiteScore in 2018, the formula will be as follows:

$$CiteScore = \frac{Citation\ Count\ 2018}{Documents\ 2015 - 2017}$$

Its essence is schematically shown in Fig. 4.

The most important thing that both the JIF and CiteScore are citation index oriented. The scientific impact is determined by the relation between the number of scientific materials and their relevance which is equalized with the concept of citation index. Despite quite extensive criticism the h-index is recognized as the most relevant used ABM [8], [11], [12]. As a result, we understand that no algorithm is suitable since they are all based on citation score. Generally, the main problem is that citation on the history of Ukraine (and number of local history problems) will be deliberately low since it is less interesting for the scientific community of other countries. At the same time for Ukraine this is a

completely different dimension.



Fig. 4. CiteScore (this figure taken from Scopus website)

IV. CONCLUSION

Considering the specifics of historical disciplines and understanding of the subject importance obvious is the inappropriateness of using traditional metric indicators. History in the Education Paradigm System undoubtedly is a discipline of special importance as it directly affects of the national identity determination. We have a strong obligatoriness to create a more flexible Scientometrics with an understanding of humanitarian characteristics and specifically in History. Optimization of this process plays an extremely important role in filling the database with scientific materials. It's about specifically targeted bot-programs, according to the installed software. The results will be especially useful for software developers in similar projects.

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