

Biomedical Scientific and Professional Social Networks in the Service of the Development of Modern Scientific Publishing

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ABSTRACT

Information technologies have found their application in virtually every branch of health care. In recent years they have demonstrated their potential in the development of online library, where scientists and researchers can share their latest findings. Academia.edu, ResearchGate, Mendeley, Kudos, with the support of platform Google Scholar, have indeed increased the visibility of scientific work of one author, and enable a much greater availability of the scientific work to the broader audience. Online libraries have allowed free access to the scientific content to the countries that could not follow the economic costs of getting access to certain scientific bases. Especially great benefit occurred in countries in transition and developing countries. Online libraries have great potential in terms of expanding knowledge, but they also present a major problem for many publishers, because their rights can be violated, which are signed by the author when publishing the paper. In the future it will lead to a major conflict of the author, the editorial board and online database, about the right to scientific content. This question certainly represents one of the most pressing issues of publishing, whose future in printed form is already in the past, and the future of the online editions will be a problem of large-scale.

Keywords: information technologies, research, online library.

1. BIOMEDICAL SCIENTIFIC RESEARCH SYSTEMS

Research systems are computer systems that can solve complex problems in specific scientific, technical and medical areas (1, 2). British Computer Society gave a different definition of research systems, which is: “Research system is seen as computer comprehension component of human knowledge—researches in such form that the system can offer intelligent advice or make intelligent decision on the function of which is to be processed” (3, 4). For the collecting, processing and the dissemination of the scientific and research information in the scope of the informational systems within the different scientific fields, the suitable knowledge, skills and the researches experience is necessary. In the goal of the improvement of the performances of the information systems, and the saving of the working time of the research personnel, there is the tendency to the introduction of the research system in the domain of the biomedical scientific and research information, and that in the

frame of the activity (3, 4, 5):

- cataloging and indexing,
- information retrieval, and
- development of interface with on-line system for the information retrieval.

Following the previous statements the social networks can be divided into several groups, depending on connection methods, field of operations or expertise of those who participate in specific networks (6, 7):

- Social networks with personal physical connectivity (the citizens’ associations, transplant networks, etc.),
- Global Internet social networks (Facebook, Twitter, Skype),
- Specific internet health related social network (forums, Health Care Forums, Healthcare Industry Forums),
- Medical social internet networks for non professionals (DailyStrength, CaringBridge, CarePages, MyFamilyHealth),
- Scientific internet social networks (BiomedExperts, Re-

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- searchGate, Academia.edu, Kudos, Mendeley),
- Social internet networks supported by professionals (HealthBoards, Spas and Hope Association of Disabled and diabetic Enurgi),
- Scientific networks in the world's biomedical literature databases (Current Contents, ISI Web of Knowledge, PubMed/Medline, PubMed Central, Ovid/EMBASE, EBSCO, Index Copernicus, etc.).

2. RESEARCH SYSTEMS FOR CATALOGING (BIOMEDICAL LITERATURE DATABASES)

One of the oldest procedures of the documents management is cataloging. Progressive expansion of biomedical documents and information and technological advances require even better selection of data and information retrieval in order to achieve better application of scientific information. This goal is accomplished by use of world's databases (3, 4, 7).

Web of Science (WoS) - Bibliographic database for all areas of science with more than 20 million papers from over 9000 journals. Web of Science Citation Database combines citation databases that produce the Institute for Scientific Information (ISI) - Thomson Reuters (TR) in Philadelphia, USA.

Current Contents (CC) - bibliographic database, covering all areas of science. Since 1993 until now held by the TR (previously ISI, Philadelphia). Characterized by a high criterion of selection of journals, coverage of all areas of science, the frequency of updates, summary of the author, the author addresses, names and addresses of publishers, the ability to view the content of each issue (volume) of journals from all fields of science, and add keywords that improves search. Through its 7 sections covering all fields of science with more than 7500 journals, and for biomedicine.

MEDLINE (MEDLar on Line) is one of the largest, most comprehensive, as well as the oldest of bibliographic/citation biomedical database by National Library of Medicine (National Library of Medicine - NLM, Bethesda, USA). It can be searched through two NLM's Web-site services: PubMed and NLM Gateway. PubMed provides some useful links on the site Homepage: Mesh database, Journals database - a database of journals, Single Citation Matcher and Bath Citation Matcher to verify one or more citations, Clinical Queries search the clinical categories (diagnosis, therapy, prognosis) and Special Queries to search by multiple categories. NLM Gateway is a service through which NLM provides results of MEDLINE and other NLM databases and database searches in the category of bibliographic resources: MEDLINE, MEDLINE plus, NLM Catalog, TOXLINE Special, Bookself, DART, Meeting Abstracts.

SCOPUS - Citation/bibliography, multi-disciplinary database, includes works from 15,000 journals, 535 journals in open access, over 200 million quality web sources and 12.7 million of patents. It is maintained by Elsevier, since 1966 (Citation part since 1996) till today.

EBSCO Publishing (<http://www.ebsco.com>). EBSCO Information Services is the world's largest service, the leader in securing access to the print and electronic journals, books and research databases (e-journal, e-book and e-journal package and print subscriptions, e-resource management tools, full-text and secondary databases "). EBSCO is a synonym for "e" industry, as well as "e" agent. EBSCO includes 31 re-

gional offices, localized in 23 countries around the world and serves many subscribers - information and library services. In its seventh decade of existence and activity, EBSCOhost offers many of its own databases with full texts, and many other popular databases from leading information publisher. EBSCO maintains contacts with over 79000 publishers.

HINARI base - The Health InterWork Access to Research Initiative established in 2002 with about 1500 medical journals from 6 major publishers. The advantage of the subscription is that is given to non-profit institutions: universities, colleges, research institutions, medical and health colleges, and students.

PsycINFO - bibliographic database, maintained by the American Psychological Association (APA). Covers about 2000 journals in more than 25 languages.

FreeMedical Journals (<http://www.freemedicaljournals.com>) - Directory of journals with free, complete articles in the field of medicine, covering more languages. It contains 1481 journals, a search can be done via the search box or via the link for the category of journals.

BioMed Central is an independent publishing company that provides direct free access to peer-reviewed scientific work on biomedical research. Manufacturer: BioMed Central, publications are free and constantly from the moment of publishing are available on-line. BioMed Central covers about 170 journals in the field of biomedical research.

3. SCIENTIFIC INTERNET SOCIAL NETWORKS (RESEARCH PLATFORMS)

Academia.edu, ResearchGate, Mendeley, Kudos, with the support of platform GoogleScholar, have indeed increased the visibility of scientific work of one author, and enable a much greater availability of the scientific work to the broader audience. Online libraries have allowed free access to the scientific content to the countries that could not follow the economic costs of getting access to certain scientific bases (especially great benefit occurred in countries in transition and developing countries). Papers on these platforms are generally uploaded by the authors themselves, so the author makes them available (8, 9).

Academia.edu is a platform for academics to share their research papers (31 million registered users as of January 2016 and over 8 million uploaded texts) (8, 9).

ResearchGate (based in Boston, Massachusetts and Hannover, Germany; managed by a group of active scientists) is the largest (and most popular) (Table 1) professional social network for scientists and researchers, where they can collaborate with their colleagues and peers worldwide. Articles can be imported from online databases directly to ResearchGate (if they are open access) or author can manually put his article on his profile (more than 9 million users).

Kudos is also a free service that helps author to increase the visibility and impact of published work. (in June 2015 50,000 researchers) (9).

BiomedExperts is a free online service researchers (connect, network, communicate and collaborate). It was first scientific professional network.

Mendeley (purchased by the Elsevier publishing company in 2013) is a platform where author can manage, share and discover both content and contacts in research (9).

Platform exoplatform.com is an open-source platform software designed for enterprises. Author can also manage, share and discover content.

Meta.com analyzes the number and quality of citations associated with each article (with this information, it ranks the papers in order of importance) (10).

Social network	Rank
ResearchGate.net	511
academia.edu	821
mendeley.com	8485
exoplatform.com	184935
growkudos.com	291636
meta.com	2176249

Table 1. Scientific internet social networks by Alexa Traffic Ranks (based on website popularity)

Google Scholar is a freely accessible web search engine that indexes the full text of literature (Figure 1) across an array of publishing formats and disciplines (includes most peer-reviewed online journals of Europe and America's largest scholarly publishers, plus scholarly books other non-peer reviewed journals) (5).

4. ADVANTAGES AND DISADVANTAGES OF SOCIAL NETWORKS

Social networks, as libraries, have enormous potential. They are easy to access, easy to use, and represent the library of the 21st century. They are tempting to younger generations, and for its software interface and many options for sharing the material, represent something that is often used. Authors, individually, upload their articles, and thus increase the availability of their content.

Conflict arises certainly between author and publisher, because there is no clear mechanism to prevent the aforemen-



Figure 1. Scientific internet social networks – notice role of Google Scholar

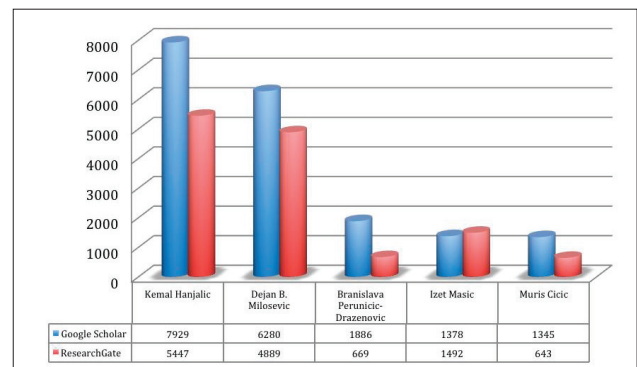


Figure 2. Top 5 employees of the University of Sarajevo with number of citations – different source show different number of citations (retrieved 26.11.2016.) (Emin Sofic has not ResearchGate profil)

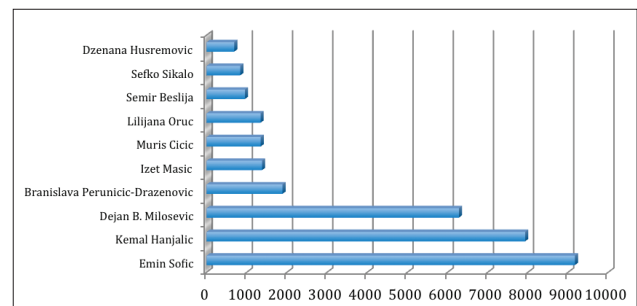


Figure 3. Employees of the University of Sarajevo ordered by number of citations (retrieved 26.11.2016.)

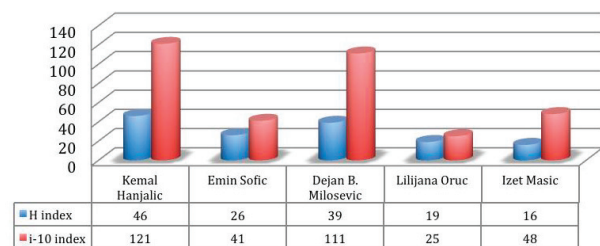


Figure 4. Top 5 employees of the University of Sarajevo ordered by H index (notice correlation between H index and i-10 index) (retrieved 26.11.2016.)

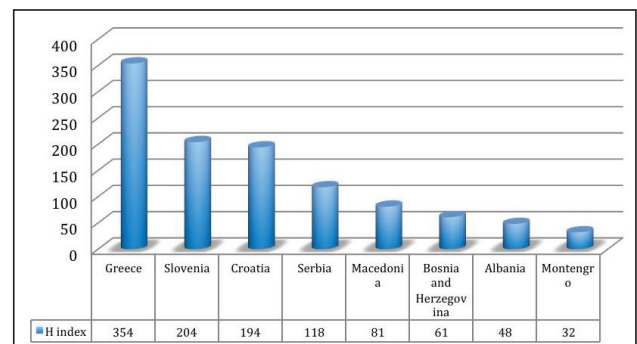


Figure 5. Balkan countries ordered by H index (retrieved 26.11.2016.) (according to scimagojr.com)

tioned problem, and there are no well-defined sanctions in case of violation of the rights of the publisher. This question in the future will certainly be a hot topic, and certainly it will be a subject of conflict. Online libraries, will enable the development of many parameters that allow monitoring of work of one author. Scientometric parameters will enable ranking of the author, and this will become a major tool in the ranking of the authors of a particular profession (11, 12). However, one should be careful with it, because it is still H index, as well as digitalization, something that appeared in

the previous period, so that the work of many scientists of the 20th century, due to the unavailability of these works, and sometimes because of the lack of electronic forms of work, is being neglected. The fact is that ResearchGate already provides information about the number of publications on it, the number of citations, and it is a factor that shows scientific significance of one author, and is a good tool for comparing and ranking. GoogleScholar tracks the number of citations (Figure 2), and based on it, and that number of citations, appeared a trend by which the countless rankings are made. Fact is that new scientometric indicators (for researchers – h index, i10-index, for journals – impact factor, echo factor, h5-index, h5-median), have to be developed to monitor in addition to the number of publications, number of citations, and other parameters that have a major impact on scientometric indexes (it is not the same to publish the same work in the Anglo-Saxon speaking world and in the Middle East or Eastern Europe) (11). Also there is a lot of inconsistencies, different networks show a different number of citations—there is no uniformity (Figure 3). The issue of co-authorship and many collaborations, of many authors or associations, and appearance of self-citation, will also come to the fore, because it is another means by which theoretically could create a false picture about the work of one author. In the future, if not in the present data obtained from these platforms will be used for employment, or in obtaining grants. The literature identifies as bibliometric, scientometric or informetrics research, depending on the title you are a discipline that deals with this issue bibliometrics, scientometrics or informetrics and there really is a problem and the future is for sure in open access databases, but it raises many questions about copyright (9).

Perhaps there should be some type of a regulatory body that will be in charge of this issue, and becomes an imperative, but certainly the establishment of such a body, which would deal with issues of copyright protection, in the modern world is quite difficult, because the basic idea of the Internet that its contents is available all over the world for free. The introduction of some fees for content on online platforms would turn readers against very platforms. Social networks must take into account also about the same initials of the author, which is difficult and could not be coped. Even the same first and last names occur. The usage of ORCID number will greatly enable distinction of the author, or the usage of ORCID number, must prevail and become something that is binding for each author.

5. CONCLUSION

Online libraries have great potential in terms of expanding knowledge, but they also present a major problem for many

publishers because their rights can be violated, which are signed by the author when publishing the paper. Payment of open access module of publication is sometimes extremely expensive, and certainly poor countries can rarely afford it themselves. On the other hand other modules approach to work, leaving large rights to the journal to distribute scientific content. In the future it will lead to a major conflict of the author, the editorial board and online database, about the right to scientific content, and this question certainly represents one of the most pressing issues of contemporary publishing, whose future in printed form is already in the past, and the future of the online editions will be a problem of large-scale.

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