

# **Correlation of the access to electronic services in Serbia and the presence of Serbian authors in Web of Science**

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## *Abstract*

*Consortium for coordinated acquisition of Serbian research libraries KoBSON was established in 2001 as a result of a contract between six main research libraries. Ministry for science provides the financial resources and the National Library of Serbia negotiates the contracts with providers of scientific information. Members of the Consortium organized education of librarians and users at university libraries, all state faculties and institutes all over Serbia. Consortium KoBSON started with access to about 3.000 journals in 2002, and every year the number was growing, according to wishes of the academic community and available resources. At present academic institutions in Serbia have access to 17.000 e-journals. The most used services are Science Direct, Springer and Ebsco. Data about the usage show steady growth. Precise available data show that the number of downloaded articles grew from about 610,000 in 2004 to more than 820,000 in 2006. Availability of world current scientific journals had the important impact on Serbian authors. Between 2001 and 2006 the number of publications by Serbian authors in journals included in the database Web of Science doubled, showing that there is a correlation between the availability of current scientific resources and their presence in the Web of science.*

## **Correlation of the access to electronic services in Serbia and presence of Serbian authors in Web of Science**

Electronic services in Serbia are available thanks to the efforts of the established Consortium for coordinated acquisition KoBSON. Achieved results of the consortium of Serbian libraries and influence of consortium activities results on the scientific productivity of Serbian authors are discussed in this article. We believe that there is a correlation between the availability of current scientific journals to the academic

population in Serbia and the ability of Serbian authors to produce articles that are accepted for publication in leading world scientific journals.

Consortia play more and more important role in the modern librarianship, and there is a fast growing literature about them in library journals.<sup>1</sup> There are different models of consortia, nationwide, regional, subject-specific, consortia of consortia etc, but the main thing is that consortia are playing a very important role and getting more and more functions<sup>2</sup>, since it is not possible to expand library collections indefinitely to be able to fulfill all the information requests. As Sheng at al. say in a recent article<sup>3</sup>: “The general modes of library cooperation are sharing union catalog, storage equipment, collection development, and human resource in the levels of local, region and country area... The resurgence of library consortia in recent years has shown the important functions of cooperation and the shift from a peripheral and limited resource sharing to an integrated system-wide and formalized resource sharing. Libraries are fast shifting from sharing bibliographic information to sharing technology for bibliographic control and information services like collaborative digital reference service”. The leading force in building consortia are usually academic libraries because their patrons have the greatest information needs that is not possible to fulfill with single library budgets, even at the richest world universities.

There are “success stories” in library literature, which describe the impact of wide access to e-journals on the society. In Iceland the free access to 10,000 e-journals is available to the whole population of the country, without restrictions<sup>4</sup>. Data about downloads of articles show the constant growth from about 100,000 in 2001 to nearly 500,000 in 2005. The report from Statistics Iceland for 2005 shows that 88 per cent of the population aged 16-74 years use computers and 86 per cent use the internet, mainly for information search and communication. A total of 78 per cent of the population state that they use the internet to “read/download newspapers or magazines” and 34 per cent “seek healthrelated information”. Those data show that Icelanders are really living in the information era. In Korea, 400 libraries formed a strong consortium named the Korea Electronic Site License Initiative (KESLI)<sup>5</sup>. Consortium has subject sub-consortia, and from 2001 to 2005 the level of use of scholarly information grew six times. Forty five publishers and more than 26,000 journals are included and are available through e-Gate database. Nearly half a million articles was downloaded in the first six months of year 2005, about 41% were from applied sciences, 28% from social, 17% from natural sciences and 14% from humanities. From about 69.000 registered users, graduate students and masters were the majority – 41%, undergraduate students 21%, researchers 17%, professors 13%, librarians 2% and others 6%. The access to scientific literature in Slovenia is also provided through consortia, linked to the COBISS.Si system. The system provides bibliographic records or integrated data as well as full-text databases from different providers to the end users and librarians<sup>6</sup>.

Very inspiring experiences for Serbia are described in articles concerning Turkey. The positive effect of electronic access to scientific literature in the consortium of Turkish university libraries on the increase in scientific publications from Turkish institutions, included in the Web of Science database in the last years, was discussed in a paper by M. Kirlidog and D. Bayir<sup>7</sup>. The increase between 2001 and 2003 was 53% for Turkey, 34%

for China and 27% for South Korea. The total world increase for the same period was 5.5%. Library consortium was established in 1999 and started with contracts with database provider Ebsco and Academic Press. In 2001 the consortium ANKOS was established for the whole country and more contracts were signed. Consortium determined six activity areas to accomplish its mission:

- maintaining contact with providers and assessing offers;
- negotiating deals and acquiring database usage licenses;
- managing agreements;
- analyzing usage statistics;
- developing an awareness about ANKOS among academics and government officials; and
- training librarians and users.

It is mainly due to the activities of ANKOS that Turkish academic institutions have had an accelerated growth of electronic database acquisitions and use since 1999. At the beginning of 2005 there were 53 state and 24 private universities in Turkey, 48 of which were founded in or after 1992. Since those new-founded universities did not have libraries, electronic databases proved to be very useful, not only for cost efficiency, but also in providing access to past issues of scientific journals to their professors and students. Through ANKOS, Turkish researchers in the country got access to current and past issues of thousands of academic journals and scientific books. The consortium provided academic libraries with cost efficiency that they would never attain individually. Researchers used those resources heavily and the number of publications with at list one author from Turkey in Web of Science increased from 5.383 in year 1998 to 11.990 in year 2003, showing the impact of the availability of current scientific information to the productivity of scientists from Turkey.

First consultations about forming of a Serbian Library Consortium started in October 2001. Participants at the meeting in the National Library of Serbia, where the decision to establish a consortium was made, were the directors of National Library of Serbia, University Library "Svetozar Markovic" from Belgrade, Library of Matica srpska from Novi Sad, University Library "Nikola Tesla" from Nis, University Library of Kragujevac, heads of the Reference Departments from National Library of Serbia and University Library "Svetozar Markovic", and presidents of the Library Associations of main public and academic libraries of Serbia. All the participants agreed that a consortium is necessary to fulfill a lot of urgent tasks for the libraries in Serbia, after a long break in development under an undemocratic regime and international isolation. The goals were formulated as follows:

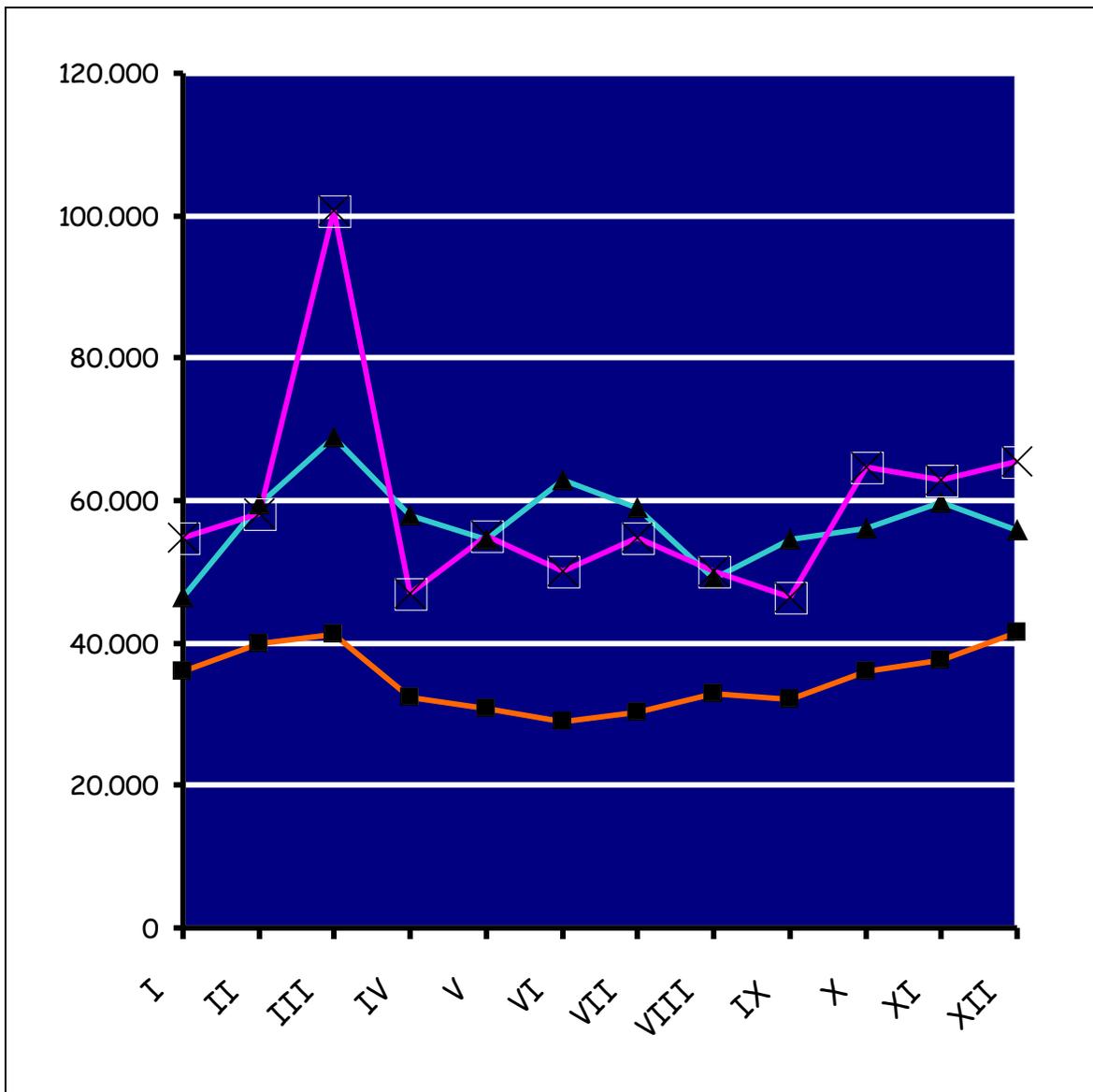
- to subscribe as a consortium to all the necessary information resources for library users in Serbia, both electronic and in paper form. Project eIFL was the first project established in Serbia, but the plans were made to move on and negotiate with other suppliers and provide as many resources as possible.
- to educate both librarians and library users and to promote new technologies and new information resources, necessary for building a modern democratic society, promoting the life-long learning and filling the gap between developed and undeveloped countries.

- to help in fund raising for purchase of necessary equipment and specific needs for members of the consortium.
- to create new databases and to increase the availability of print and electronic resources in the country, by creating and maintaining the web-accessable databases.
- to produce and maintain a web-accessable news letters for the members of the consortium.

Governing body of the Consortium consists of directors of the participating libraries, heads of main reference departments and the legal representative of the Consortium is the National Library of Serbia. Library staff at the reference departments of the participating libraries is responsible for planning and realization of consortium goals. At the beginning of consortium activities all the funding was received from the Ministry of science, technology and development of Serbia, Ministry of culture of the Republic of Serbia and eIFL project and from 2003 all Consortium activities are treated as a project of the Ministry of Science aimed to help the development of science in Serbia. There are seven state universities which are connected to the Academic Computer Network together with state research institutions, national and research libraries and museums. The access to the electronic resources that Consortium purchases is provided through the Academic network and depending on the needs of different institutions, the access to adequate resources is provided.

At the beginning of the whole project about 3000 journals was available through EBSCO service. The next provided service was Ideal Library (Academic Press), database Web of Science, and the number of services grew according to the explicit demands from research institutions and available state resources.

At first the usage of electronic resources was not very high. Consortium then organized education of librarians from research libraries, and afterwards intensive user education started at the research institutions. Almost immediately after the establishment of the Consortium, its website was created and now it is the main way on which the important news and information are disseminated. The results of all those efforts are significant, especially after the quick development of the Academic Network. The fast growth of the number of downloaded articles is visible from the Figure 1. The total number of downloaded articles grew from about 650.000 (-) in 2004 to 680.000 in 2005 (-) and nearly to 850.000 (-) in 2006. The growth is the result of intensive educational and marketing activities.



**Figure 1: Number of downloaded articles in years 2004(-), 2005 (-) and 2006(-)**

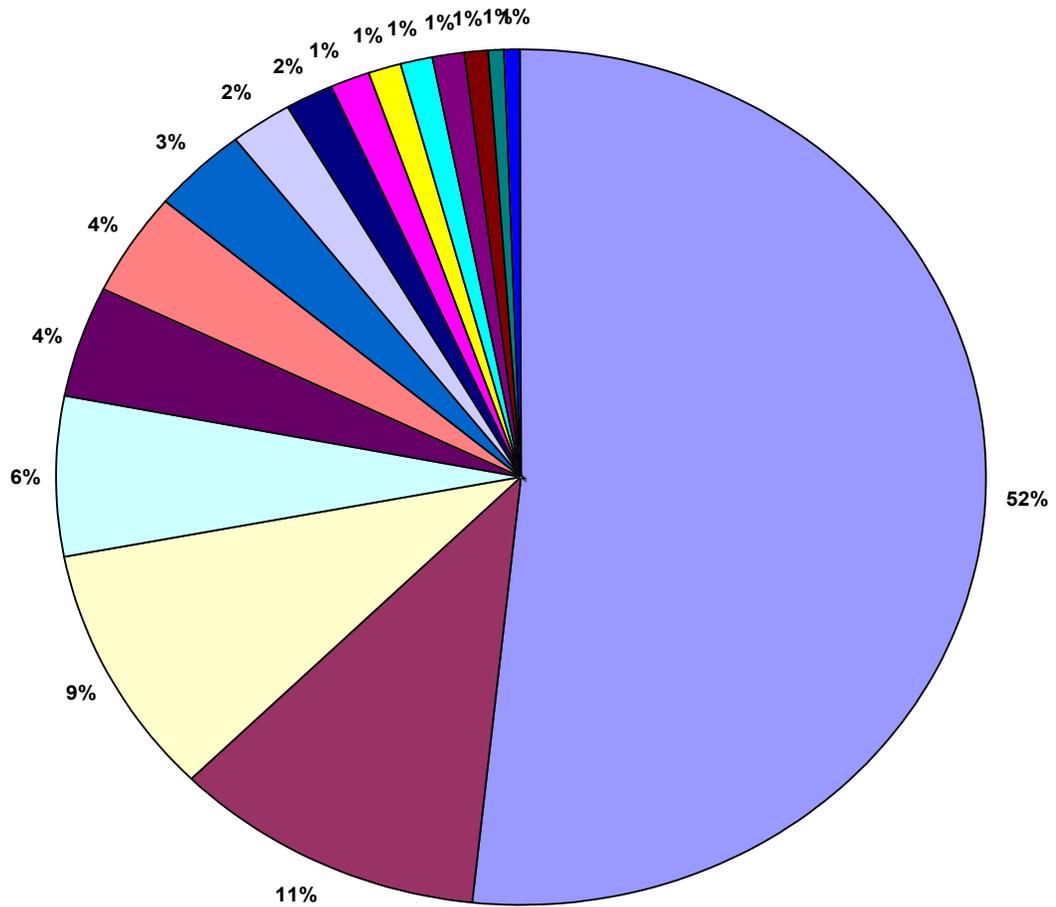
The number of available services changed, growing every year. Majority of services are present in Serbia from year 2004, so it was possible to compare the data about the number of downloaded articles from different services.

The most used services are Science Direct, EBSCO and Springer. Data about the usage for all services show steady growth. The numbers of downloaded articles from different services are presented on the Table 1, and their share in the whole number of downloaded articles in year 2006 is presented on Figure 2.

<b>SERVICE</b>	<b>TOTAL 2004.</b>	<b>TOTAL 2005.</b>	<b>TOTAL 2006.</b>
<b>Sci Direct</b>	<b>417.003 (63,8%)</b>	<b>389.222 (57.3%)</b>	<b>438.862 (51.8%)</b>
<b>EBSCO</b>	<b>71.776 (11%)</b>	<b>93.403 (13.7%)</b>	<b>90.827 (10.7%)</b>
<b>Springer</b>	<b>15.357 (2.4%)</b>	<b>42.937 (6.3%)</b>	<b>80.071 (9.5%)</b>
<b>Blackwell</b>	<b>29.509 (4.5%)</b>	<b>37.529 (5.5%)</b>	<b>52.714 (6.2%)</b>
<b>JSTORE</b>	<b>4.958 (0.8%)</b>	<b>25.877 (3.8%)</b>	<b>33.908 (4%)</b>
<b>AmChemSoc</b>	<b>42.913 (6.6%)</b>	<b>30.674 (4.5%)</b>	<b>32.428 (3.9%)</b>
<b>Oxford</b>	<b>-</b>	<b>9.367 (1.4%)</b>	<b>29.650 (3.5%)</b>
<b>ProQuest</b>	<b>14.746 (2.3%)</b>	<b>16.424 (2.4%)</b>	<b>18.891 (2.2%)</b>
<b>IoP</b>	<b>11.234 (1,7%)</b>	<b>-</b>	<b>13.274 (1.6%)</b>
<b>Hein Online</b>	<b>-</b>	<b>-</b>	<b>12.045 (1.4%)</b>
<b>IEEE</b>	<b>8.814 (1.3%)</b>	<b>-</b>	<b>9.998 (1.2%)</b>
<b>HighWire</b>	<b>-</b>	<b>5.186 (0.8%)</b>	<b>8.639 (1%)</b>
<b>Sage</b>	<b>-</b>	<b>-</b>	<b>8.542 (1%)</b>
<b>Emerald</b>	<b>4.430 (0.7%)</b>	<b>3.858 (0.6%)</b>	<b>6.958 (0.8%)</b>
<b>CUP</b>	<b>1.621 (0,3%)</b>	<b>6.481 (1%)</b>	<b>6.161 (0.7%)</b>
<b>TEEAL</b>	<b>4.697 (0.8%)</b>	<b>2.909 (0.4%)</b>	<b>4.266 (0.5%)</b>
<b>APS</b>			<b>193</b>
<b>Kluwer</b>	<b>25.129 (3.8%)</b>	<b>15.880 (2.3%)</b>	<b>-</b>
<b>TOTAL</b>	<b>653.187 (100%)</b>	<b>679.747 (100%)</b>	<b>847.427(100%)</b>

**Table 1: The number of downloaded articles from different services 2004-2006**

**Figure 2: DOWNLOADED ARTICLES FROM DIFFERENT SERVICES (2006)**



Sci Direct	EBSCO	Springer	Blackwell	Jstore	AmChemS
Oxford	ProQuest	IoP	Hein	IEEE	HighWire
Sage	Emerald	CUP	TEAL		

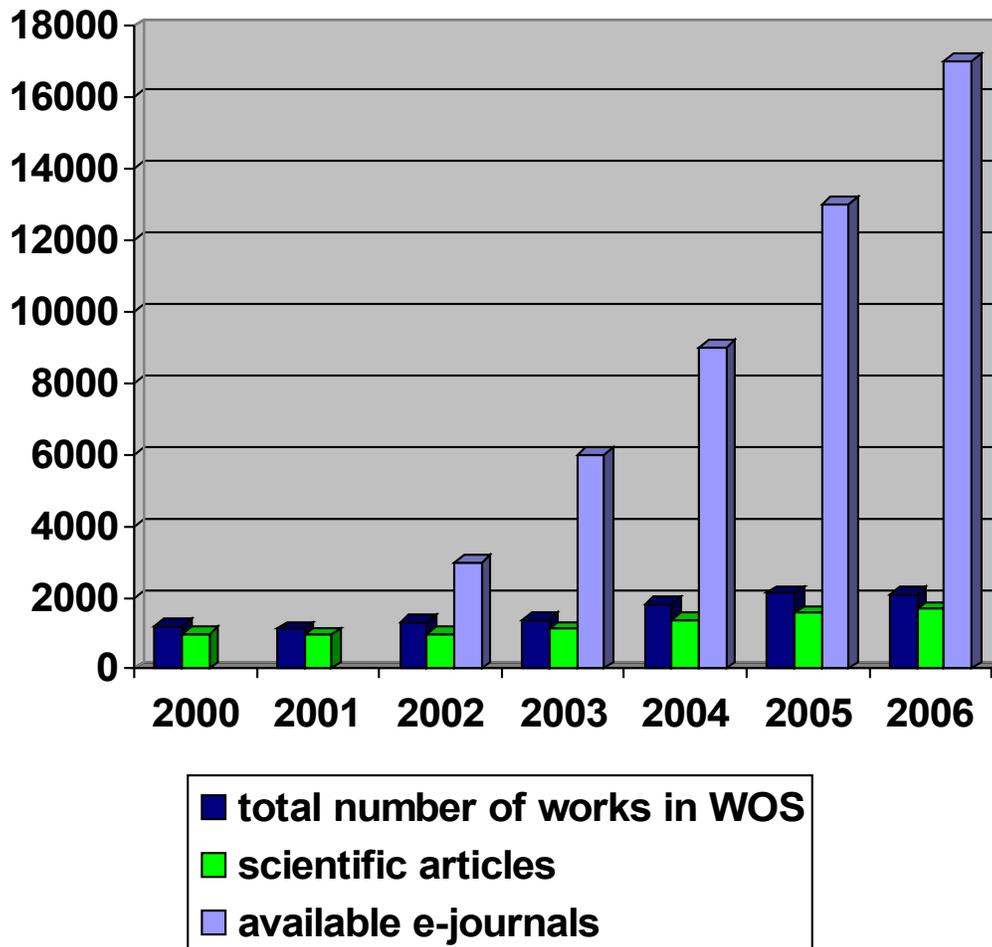
Availability of current international scientific journals in Serbia made it possible for Serbian scientists to re-establish communication and get the information about the international trends in science. The politics of grant distribution for projects financed by the Ministry of science had also the important impact on the authors' choice of journals for publishing their scientific results. Usually the presence of a country in the world science is estimated according to the number of articles by its authors, included in the database ISI Thompson Web of Science, which covers the journals with the major impact in all scientific disciplines.

We collected the data about the number of publications by Serbian authors in journals included in the database Web of Science after year 2000. The data are given on Table 2.

<b>WORKS BY AUTHORS ACTIVE IN SERBIA</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Review</b>	19	11	20	14	33	40	36
<b>Article</b>	1001	967	979	1131	1367	1562	1678
<b>Book Review</b>	4	8	6	1	1	3	6
<b>Editorial Material</b>	3	12	10	18	18	22	20
<b>Meeting Abstract</b>	129	105	247	180	337	419	308
<b>Other material</b>	40	28	52	38	63	73	60
<b>TOTAL</b>	1196	1131	1314	1382	1819	2119	2108

**Table 2: Number of articles in journals included in Web of Science**

Between 2001 and 2006 the number doubled, showing that there is a correlation between the availability of current scientific resources and their presence in the Web of Science. Our results are in correlation with the results for Turkey<sup>6</sup>, where the growth of number of articles in Web of Science between 2001 and 2003 was 53% and the consortium that provided Turkish scientists with electronic resources was established in 1999. In Serbia the consortium that provided Serbian scientists with electronic resources was established in 2001, and the growth of the number of publications by Serbian authors in the Web of Science between 2003 and 2005 was also 53%. The correlation between the number of available e-journals and the number of published papers is presented on Figure 3.



**Figure 3: Number of published works by authors from Serbia in Web of Science for years 2000-2006**

We can conclude that the importance of availability of current scientific results to the development of science in a country could not be over-estimated, and that the role of library consortia in their provision is getting more and more importance.

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