

# Computer Science and Information Systems: Publishing an International Open Access Journal in a Developing Country

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## Abstract

Computer Science and Information Systems (ComSIS) is an open-access, peer-reviewed scientific journal founded in Serbia. Based on our experience in managing ComSIS, in this paper we analyze the impact of the open-access publication model on the success of journals from developing and transition countries (DTCs). We discuss alternatives for financial sustainability, the importance of coverage in citation databases through observed effects on citation and article submission patterns, and the challenges that potential success can bring with respect to the increased volume of submitted articles, plagiarism, and the perception of the journal. Our experiences suggest that: (1) open access and financial sustainability can coexist in a DTC, (2) coverage in WoS is the single most determining factor for the success of an up-and-coming journal, (3) domestic and international perception a journal from a DTC, newly covered in WoS, can lead to an increased volume of low-quality and even plagiarized submissions, placing additional strain on the editorial staff. We hope that the findings and arguments presented in this paper will assist current and potential journal editors and publishers, especially from developing countries, in finding suitable models for ensuring the success of their respective journals.

**Keywords:** Open Access; journal publishing; developing and transition countries; computer science; sustainability; coverage; perception; citation; Web of Science; Google Scholar

## Introduction

As in many other areas dependent on financial sustainability, scientific journals from developing and transition countries (DTCs) may find it difficult to adopt the open-access model of publishing. Based on our experi-

ence in editing and managing Computer Science and Information Systems (ComSIS), an open-access, peer-reviewed scientific journal founded in Serbia, in this paper we analyze the feasibility and impact of open access on journal management, in the context of the business model, patterns of article submission and citation, coverage in major indexing databases (in this case, WoS), and the perception of the journal by the scientific community. Our primary goal is to provide current and potential journal editors and publishers, especially from DTCs, with useful guidelines for establishing suitable models of publication for their respective journals, rather than advertise ComSIS (although the latter may be difficult to avoid).

The rest of the paper is organized as follows. After describing issues pertinent to open-access publishing models, we provide a basic description of the ComSIS journal, its business model, patterns of article submission, and patterns of citation. This is followed by a discussion of the implications and recommendations relevant to journal management.

### **Open-access publishing**

The open-access policy of distribution of published manuscripts ensures free availability on the public Internet, permitting any user to read, download, copy, distribute, print, search, or link to the full texts of published articles. From the standpoint of readers and authors this may be an ideal scenario for content dissemination; however the journals deciding to implement such a policy are faced with difficulties in generating revenue. [Björk \(2004\)](#) discusses business-model problems for OA journals, emphasizing that scaling-up from a few papers a year to larger publication volumes is difficult (employing staff, copyediting). The models considered by [Björk \(2004\)](#) include advertisements, subsidies from learned societies or research funding agencies, author charges, and “umbrella agreements” between universities and publishers.

On the upside, there is ample evidence supporting a positive correlation between journal accessibility and impact ([Wren, 2005](#)). In the cases where only some articles in a journal are published as open-access, the OA articles tend to be more cited than non-OA articles in the same journal ([Harnad & Brody, 2004](#); [Eysenbach, 2006](#)). [Norris et al. \(2008\)](#) also

support this observation, noting the existence of variety in this behavior across different disciplines (ecology, applied mathematics, sociology, and economics). [Davis et al. \(2008\)](#), on the other hand, argue that OA articles are no more likely to be cited than subscription-access articles in the first year after publication. Finally, [McVeigh \(2004\)](#) compares the impact factors of OA and non-OA journals indexed by ISI, observing that many OA journals are ranked low in their respective fields, with the existence of notable journals with very high rank, producing a mean impact factor for OA journals that is slightly above average. In addition, [McVeigh \(2004\)](#) notes that OA journals excel in the immediacy index.

Author perceptions of open-access journals are studied by [Schroter et al. \(2005\)](#). They conclude that authors generally do not object to author charges, however concern is raised regarding authors from developing and transition countries. In addition, OA journals may need to do more than their non-OA counterparts to reassure authors of their quality, as perceived quality is more important than the property of being OA or non-OA.

From the authors' viewpoint, "roads to open access" refers to the options for selecting a journal with the goal of making their article freely accessible: the "gold road" – publishing in a pure OA journal, and the "green road" – publishing in a non-OA journal that allows self-archiving of articles. [Harnad et al. \(2004\)](#), [\(2008\)](#) and [Guédon \(2004\)](#), [\(2008\)](#) discuss many issues and concerns regarding the different roads. In this article, we will highlight the importance of *journals* from DTCs taking the "gold road", as this provided our journal with the visibility of published articles instrumental in the struggle for acquiring international recognition.

### **The Computer Science and Information Systems (ComSIS) journal**

The Computer Science and Information System (ComSIS) journal is an international open-access journal published in Serbia by the ComSIS Consortium. The ComSIS Consortium is a group of leading academic institutions from universities in Serbia and Montenegro, including the Serbian Academy of Sciences and Arts, who jointly publish the ComSIS journal. The first volume was printed in February 2004. Since then, nine volumes (21 issues) were published. In the 2010 release of Journal Citation Reports by Thomson Reuters, the ComSIS journal received its first

two-year impact factor of 0.324. In addition, ComSIS is covered or selected for coverage in various indexing services, including Scopus, EM-BASE, EBSCOhost, Inspec, DOAJ, DBLP and SCIndex.

ComSIS publishes original papers on both the theoretical foundations of computer science and commercial, industrial or educational aspects that provide new insights into the design and implementation of software and information systems. It also welcomes survey articles, and features invited papers by eminent researchers that contribute to the understanding of emerging and important fields of computer science. Plans are underway to establish regular columns covering reviews of newly published books, presentations of selected PhD and master thesis, as well as information on forthcoming professional meetings. In addition to wide-scope regular issues, ComSIS also includes special issues covering specific topics in all areas of computer science and information systems. All papers are published in English. Papers that pass a strict reviewing process are accepted for publishing.

#### *Business model*

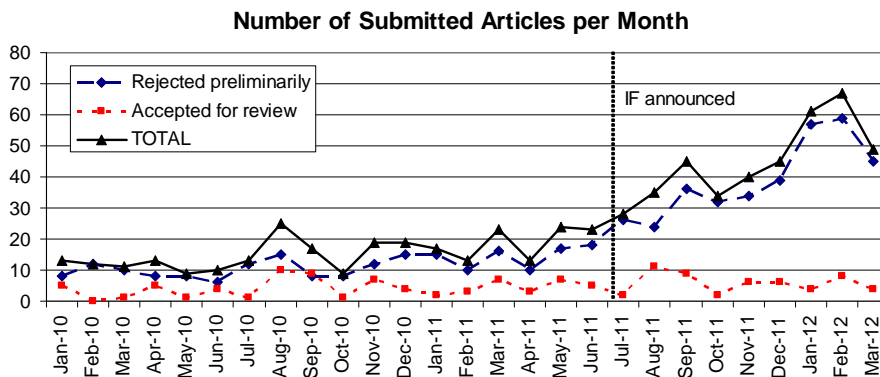
From its inception, ComSIS has relied on three main sources of income: (1) an annual grant from the Serbian Ministry of Education and Science, (2) yearly institutional fees for consortium membership, and (3) publication of special issues. Special issues usually consist of selected and expanded versions of papers presented at international conferences and workshops, where event organizers are asked to cover the expenses of issue preparation and publication. Advertisements and sponsorship by companies were utilized in the first several years, but not recently. There are no author charges, and ComSIS charges an annual subscription fee for printed volumes only. Generally, publication expenses are on the rise because of the recent rapid increase of the number of article submissions. Taking everything into account, ComSIS is self-sustainable, but not-for-profit.

#### *Submission of articles*

All articles submitted to ComSIS need to pass a strict reviewing procedure before being accepted for publication. The reviewing procedure consists of one or more reviewing cycles depending on the reviewers' judgments. Several criteria influence the final decision: originality of the

paper, matching the scope of the journal, academic merit, quality of presentation, technical correctness, etc.

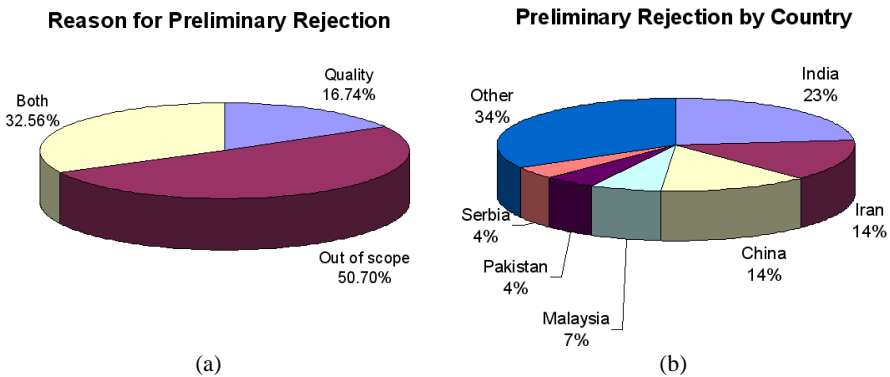
One of the most important steps in the whole process of publishing a paper is the initial examination of the submitted manuscript. Upon receiving a manuscript, the Editor-In-Chief and three members of the Editorial Board will examine it, and if the paper is outside the scope of the journal or does not meet the basic criteria for a journal article, it will be immediately rejected without further review. This step recently became particularly important because of the dramatically increased volume of submissions in the previous period. The number of submitted articles by month from January 2010 is shown in [Figure 1](#). The boost of submissions in the second half of 2011 is the direct consequence of acquiring the two-year impact factor (which was announced in June 2011). It is interesting to observe the fact that the number of preliminarily rejected papers followed this increasing trend, while the number of quality papers retained in reviewing stayed approximately the same (5-10 per month).



**Figure 1. Number of articles submitted to ComSIS from January 2010 to March 2012.**

Since the number of the preliminarily rejected papers dramatically increased from July 2011, it is interesting to examine the reasons for their rejection. The distribution of rejected papers according to the reason for rejection is shown in [Figure 2\(a\)](#). It is important to stress here that the Ed-

itor-In-Chief and the members of the Editorial Board make their decision solely on the basis of the quality of the paper and whether the subject of the paper fits the scope of the journal. Other aspects of paper assessment are left for later examination by reviewers. At this point, almost 50% of the papers are rejected because of their low quality and more than 80% because their topic falls outside the scope, while 32.56% of the papers satisfy both reasons. In addition, we have also noted (unfortunately, mainly during the review stage) a significant number of absolutely plagiarized and self-plagiarized submissions. In [Figure 2\(b\)](#) it can be seen that the majority of preliminarily rejected articles originate from Asian countries (with the category “Other,” which accumulates countries with less than 20 preliminarily rejected papers for the period, dominated by Asian and African countries). We do not imply that this observation is a general indicator of the quality of research in the given countries (after all, many articles published in ComSIS are authored by Asian researchers), but it is rather an artifact of formal criteria for academic advancement in these countries.

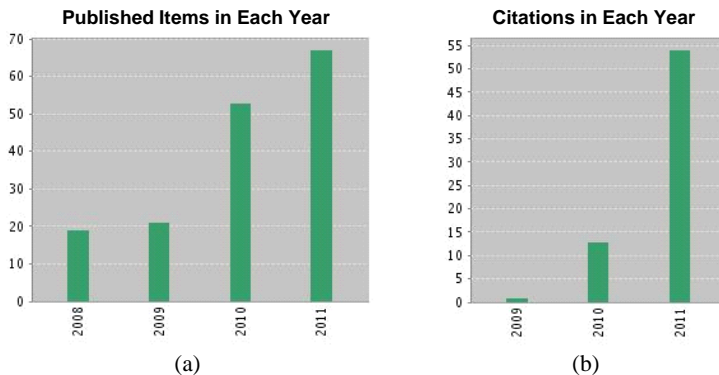


**Figure 2. Distribution of preliminarily rejected papers by reason (a) and by country (b), from January 2010 to March 2012.**

### *Article citation*

The number of published articles and citations of ComSIS articles registered by WoS is shown in [Figure 3](#). Since the coverage of ComSIS in the Web of Science started in 2008, there was a general increase of interest in

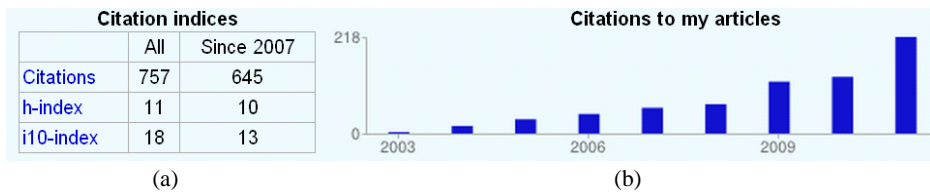
the journal – reflected not so much in the number of regular submissions, but in proposals of third parties to publish special issues. Hence the increase in the number of published articles starting from 2010. Also, a large increase in the number of citations to ComSIS articles can be observed in 2011.



**Figure 3. Number of ComSIS articles published each year (a) and number of citations in each year (b), according to the Web of Science (May 8, 2012).**

To complement the citation data from WoS, we stretched Google Scholar’s functionality for creating author profiles and made a profile for our journal by carefully inserting all articles published in ComSIS into the profile. [Figure 4](#) shows citation indices and the number of citations of ComSIS articles per month, as detected by Google Scholar. Although the data is evidently not 100% accurate (e.g. citations in 2003 could not have existed since the journal is published from 2004), through manual inspection we have determined it is accurate enough to correctly express increasing/decreasing trends. In addition, Google Scholar’s data includes citations by conference and workshop papers that are mostly missing from WoS, which is significant since these venues play very important roles in the field of computer science, with papers usually needing to pass strict review procedures. A two-fold surge in the number of citations can be observed in 2009, which we believe can be associated with the announcement of the inclusion of ComSIS on the SCI-Expanded journal list by Thomson Reuters made in the previous year. The increase of the num-

ber of citations in 2011 can also be observed in this data, which can be explained partly by the increased volume of published articles (as opposed to 2009), and partly by efforts of the editorial staff that started in 2009 to make the journal more visible (covered in more indexing databases). The one database where ComSIS has been continually covered since its inception in 2004 is the Serbian Citation Index (SCIndex), whose support was crucial for the visibility of ComSIS articles, especially in the early years.



**Figure 4. Citation indices (a) and number of citations to ComSIS articles in each year (b), according to Google Scholar (May 8, 2012).**

## Discussion

Based on our experiences editing and managing the ComSIS journal, described in the preceding section, we can arrive at the following conclusions and recommendations for current and prospective journal editors in DTCs.

Firstly, there are many options beside reader subscription for generating revenue, therefore open access and financial sustainability can coexist in a DTC. In addition, sacrificing short-term financial benefits of a closed-access model can lead to important long-term gains in terms of journal visibility, which ultimately translates to increased opportunity for attracting citations. Although ComSIS is backed by leading Serbian academic institutions, the influence of these institutions on the international stage is not strong enough to ensure a sufficient number of reader subscriptions were we to insist on a closed-access model. On the other hand, ComSIS is financially supported by the public sector through the annual grant from the Ministry of Education and Science, which is a financial option many journals may not have.



Secondly, although ComSIS is not supported by an internationally recognized and influential institution or publisher, such backing was effectively established through coverage in WoS, which we regard as the single most determining factor for the success of our up-and-coming journal: before acquiring an impact factor, ComSIS barely existed on the international stage; afterwards, the interest in the journal was dramatically boosted, with open access certainly contributing to increased citation and continued coverage.

Finally, based on the article submission patterns given in the previous section, it can be deduced that the perception of ComSIS as a journal from a DTC, newly covered in WoS, is that of an “easy” place to publish an article in a journal with an impact factor (which constitutes required minima for PhD theses, academic positions, etc., in a number of countries, some of which are shown in [Figure 2\(b\)](#)). This is most likely what lead to the increased volume of low-quality and even plagiarized submissions, placing additional strain on the editorial staff. Here it is important to emphasize that our editorial staff was not only faced with an increased volume in a “physical” sense, but was also challenged to retain a rigorous acceptance criterion and not succumb to the temptation of dramatically increasing the number of published articles, which may on one hand lead to short-term (financial) gains, but on the other hand is very likely to damage the reputation of the journal in the long run.

## **Conclusion**

In this paper we believe we have shown that although a journal may be based in a developing country and might not have support from an internationally influential institution or publisher, it is still possible for the journal to acquire world-wide recognition and be financially sustainable. Although the journal we manage and use as a case study in this paper, Computer Science and Information Systems (ComSIS), still has a long way to go in terms of absolute success in its field, key factors for achieving the above goals can be identified: a suitable business model that incorporates open access, coverage in WoS, and preparedness to handle an increased workload and retain a rigorous acceptance criterion. As [Schrotter et al. \(2005\)](#) noted that open-access journals may need to achieve more in order to reassure authors of their quality (to which we would add that

DTC journals need to do even more), at the end of the day it is the perceived quality that is most important, and in our view quite achievable in a DTC with an appropriate journal management strategy, great effort, and enthusiasm.

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