Some Advice on Scientific Publishing from the Perspective of an Experienced Researcher

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Abstract. There are many possibilities for PhD students to publish research work: workshops, conferences, book chapters, journals, open access publications, etc. In many countries it is mandatory to have at least some publications before being able to finish a PhD dissertation. In a special session for the doctoral consortium participants at PoEM 2016 in Skövde (Sweden), an experienced researcher offered his perspective on publishing opportunities. This paper summarizes the content of the special session. One intention of the paper is to encourage participants to consider extending their research publications towards journal publications.

Keywords: Publication process, review process, Business Information Systems Engineering journal, CSIMQ open access journal.

1 Introduction

PhD students, like all other researchers, have a number of different possibilities to publish their research work: workshops, conferences, book chapters, journals, open access publications, etc. In many countries it is mandatory to have at least some publications before being able to finish a PhD dissertation. In this context, it is not obvious which publishing possibility to choose. Should preference be given to the publication outlets with fast processing times and reasonable acceptance rates? Or should one aim for the most renowned publication channel?

In a special session for the doctoral consortium participants at PoEM 2016 in Skövde (Sweden), an experienced researcher offered his perspective on publishing opportunities. This paper summarizes the content of the special session. It includes different aspects, such as the motivation for publishing, bibliometric considerations, the importance of citations, etc. Special focus is on journal publications, including typical review and publication processes. One intention of the paper is to encourage participants to consider extending their research publications towards journal publications.

The remaining part of the paper is structured as follows: Section 2 briefly looks into the motivation for publishing scientific work and the possible publication channels. Section 3 introduces selected indicators from bibliometrics and their role for deciding on publication channels. Section 4 presents a typical publication and review process for a journal. Section 5 summarizes the paper.

2   Why publish? Where to publish?

Scientific communication, i.e. publishing the findings and achievements of scientific work, for most researchers is part of their everyday work. The motivation for publishing research results is not only to share interesting results with the scientific community, but includes other aspects:

- In many countries and disciplines, publications are a mandatory precondition for the next step in an academic career. PhD students often have to present a certain number of publications before being allowed to hand in their dissertation. The same is true for other academic grades, e.g., Dr. of Science, habilitation or senior lectureship, and also for professorships. There is no general agreement, how many publications of what quality are required. This strongly depends on the academic context, e.g. on the institution where the academic degree is awarded.
- Publications at workshops and conferences offer a possibility to discuss own research with other researchers which can result in valuable feedback. Presenting a paper offers the opportunity to get in contact with other members of the scientific community working on the same topics and to collect information about ongoing work which not yet has been published.
- Publications can be the key to become known in certain areas of the research community if they are accessible to other researchers and cited by them (see also section 3).
- In quite a number of countries, the number of publications and their quality is used to award funding or bonuses to the individual researcher or the research groups and organizations of the researcher publishing the work. PhD students should be aware of the local rules in order to select the "right" publication channels.

Different kinds of publications (publication channels) can be distinguished which – in combination with acceptance rates and bibliometric indicators (see section 3) - often are used as an indicator for the quality and importance of a publication:

- Conferences and workshops publish accepted papers in proceedings and invite authors to present their papers during the event. Acceptance or rejection of papers is based on a peer review process by the program committee members. Many established conferences have acceptance rates of 8 to 15%, i.e. it is a challenge to get papers accepted. In comparison to such conferences, most workshops have significantly higher acceptance rates of up to 50%. Many established conferences are included in rankings, such as the CORE ranking [1].
- Scientific journals also use a peer review process to evaluate papers. Accepted papers are published in the issues of the journal. Traditional journals do not charge the authors for publishing a paper but the readers, e.g., by raising a subscription fee. Open access journals are freely available to their readers but usually ask the authors for a processing fee. The journal impact factor (see section 3) is an indicator for the quality of journals. Furthermore, there are journal rankings, such as JOURQUAL [2].
- Book publications either are written by an authoring team or compilations of various chapters. In the latter case, the book usually is initiated by its editors

who invite authors to contribute a chapter on a certain topic. In most edited books, a peer-review process is in place. However, there is no ranking for books or book series based on acceptance rates.

For all kinds of publications, the most important quality indicator probably is the number of citations, i.e., how often the publication is included in the reference list of other scientific publications.

From a PhD student perspective, the selection of publication channels is important. What channel is the best one depends on the motivation discussed at the beginning of the section. At the beginning of a PhD project, workshop publications usually are a good starting point because the acceptance rate is reasonable and workshops offer a good possibility to get in touch with other researchers in the scientific community. Later in the PhD process, conference and journal publications should be added. Whether book chapters are recommendable or not depends on the local traditions regarding formal requirements to PhD work and reward systems. Most publication activity on the long run is connected to achieving impact (citations) and visibility (by publishing in highly ranked conferences and journals).

3 Role of Bibliometrics

Bibliometrics is the analysis of written publications, such as conference papers, books or journal articles, with statistical means. Bibliometrics originates from library and information science and is increasingly used to evaluate the scientific output of research organizations and individual researchers, and the quality of publications and publication channels [3]. Basic knowledge about bibliometrics is useful for PhD students because some indicators often are mentioned in public information about journals. Furthermore, indicators such as the h-index (see below) are more and more used during recruiting processes for academic positions and thus could be relevant for career opportunities after having finished the PhD.

The Journal Impact Factor (JIF) measures the "impact" of a journal (not an article) within a given subject area. The formula for the JIF is a ratio: the number of citations to a journal in a given year from articles occurring in the past N years divided by the number of articles published in the journal in the past N years. JIF is usually calculated for the last 2 years (N=2) or for the last 5 years (N=5). One of the many sources for JIF is the Web of Knowledge (WoK) [4]. Figure 1 shows a screenshot from (WoK) for the Business and Information Systems Engineering (BISE) journal [5]. The upper part of the screenshot shows journal information, the lower part the impact factor (2.059) and its calculation.
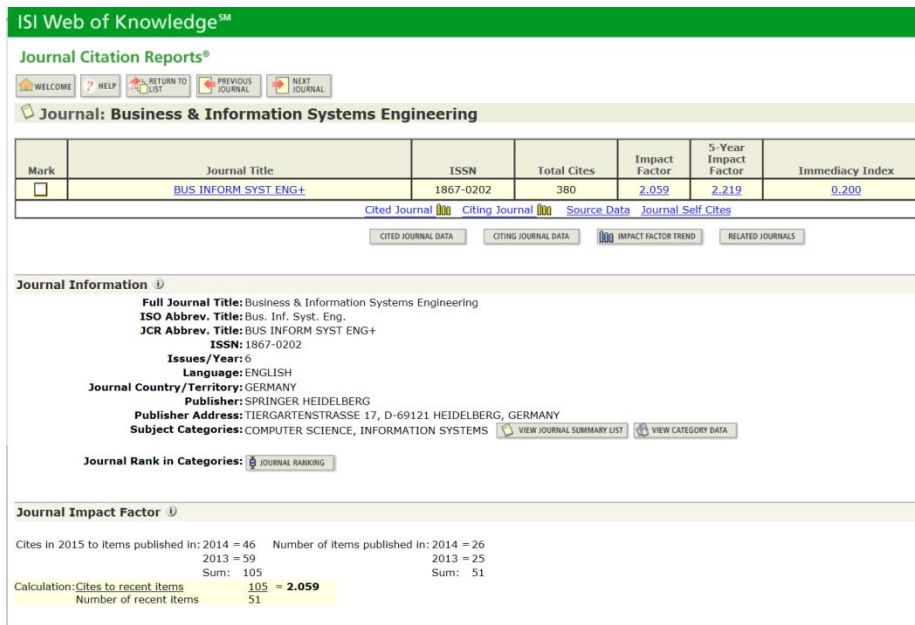
Figure 1: Screenshot from Web of Knowledge [4] showing the impact factor of BISE journal

Frequently used bibliometric indicators for individual researchers are the h-index and the g-index. The h-index was proposed by Jorge E. Hirsch in 2005 and is defined as largest number h, where a researcher has at least h publications cited at least h times. Example: a h-index of 25 means that an author with this h-index has written 25 papers which have each been cited at least 25 times. The g-index was proposed by Leo Egghe in 2006. It is calculated as follow: all articles published by a certain author are ranked in decreasing order of the number of citations they received. The g-index is the (unique) largest number such that the top g articles received (together) at least g^2 citations.

Various possibilities exist to determine the h-index and g-index for a given author. Two of these possibilities are shown in the next figures. Figure 2 is a screenshot from Harzing's Publish or Perish (PoP) tool [6] for the author "Kurt Sandkuhl". Figure 3 shows a screenshot of Scopus [7] for the same author. Although the h-index calculation is for the same author, the calculation reaches different results. PoP shows an h-index of 17, Scopus of 7. The reason for this difference is that the calculations are based on different (but overlapping) data sources. PoP uses Google Scholar which includes for this author far more publications than Scopus' own data source. Thus, bibliometric indicators should not be considered as the only correct and adequate source of information for judging quality or productivity of an individual. Such indicators should more be interpreted as what they are: indicators, not absolute measures.
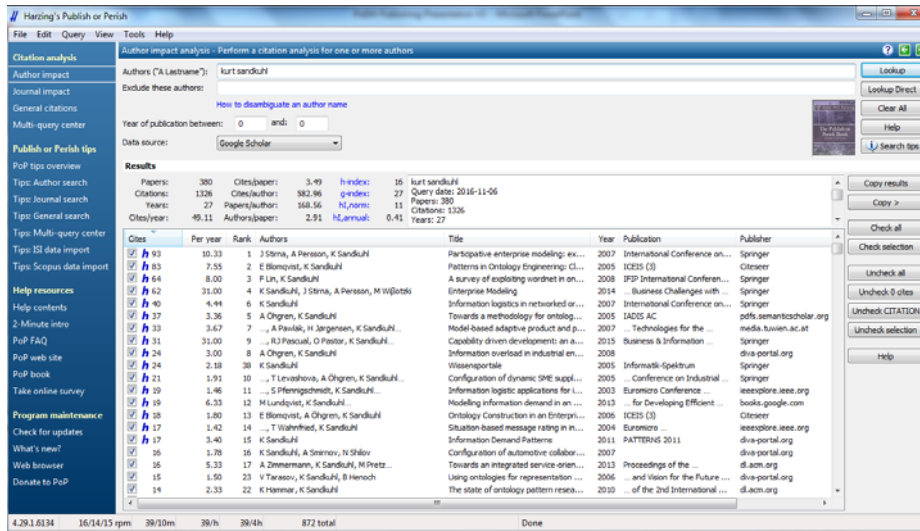
Figure 2: Screenshot from Harzing's Publish or Perish [6] for author Kurt Sandkuhl
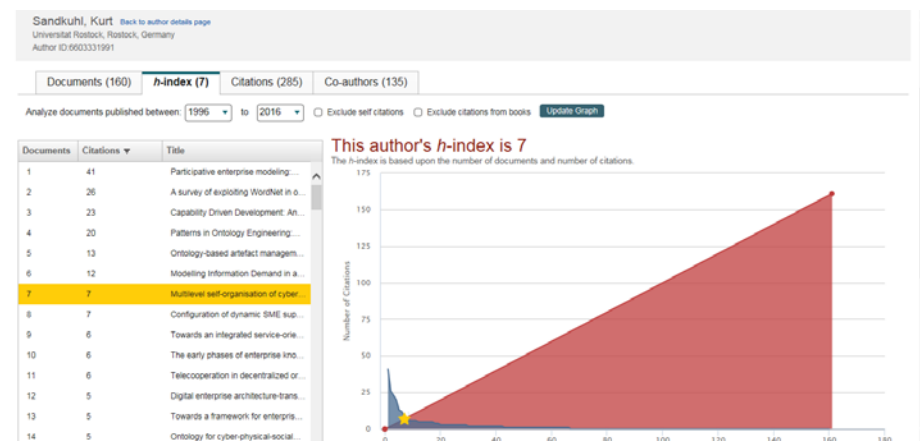

Figure 3: Screenshot from Scopus [7] for author Kurt Sandkuhl

The results from a PoP analysis (see Figure 2) can also be used to reflect on the potential impact of different kinds of publications in terms of the number of citations. Table 1 shows for the publications of author "Kurt Sandkuhl" what the share of a certain publication type is within the 10 most cited papers ("Top 10 cited") and among the 20 most cited papers. Example: 21% of the author's publications are journal papers; 25% of the 10 most cited papers and 27% of the 20 most cited papers are journal papers. The figures indicate for the author that book publications and journal publications are over-represented in the top 10 and top 20 while book chapters are not represented at all. Table 2 adds more figures to this analysis by showing the

total number of publications of the author and how many of these publications never were cited. All books were cited, but most book chapters (71%) were never cited. The clear majority of journal papers were cited (77%) but a large part of the conference and workshop papers (59%) were never cited.

Table 1: Analysis of publications for "Kurt Sandkuhl", part 1

Publication type	Percentage in total no. of publications	Percentage among the "Top 10" cited	Percentage among the "Top 20" cited
Books	2%	10%	10%
Book chapters	3%	0%	0%
Journals	21%	25%	27%
Conferences and Workshops	74%	65%	63%

Table 2: Analysis of publications for "Kurt Sandkuhl", part 2

Publication type	Total number	Percentage without any citation
Books	5	0%
Book chapters	16	71%
Journals	23	23%
Conferences and Workshops	243	59%

This analysis is only based on the publication record of one authors and by no means representative for all researchers. However, discussions of the author with other researchers indicate that some aspects visible in the analysis are applicable for many researchers: it is a good idea to write books because they receive attention whereas book chapters seem not so attractive. Journal papers seem to attract more citations than conference and workshop papers. However, conference and workshop publications also receive citations and should not be neglected.

4 Publication Process

The intention of this section is to describe typical steps of a review and publication process in a scientific journal which helps to explain why journals often need several months to process papers. The purpose of this description is to show less experienced PhD students what to expect when working on a journal publication.

Step 1: Preparation for submission. The most important activity when preparing a submission to a journal is, obviously, to write an excellent article following the best practices of scientific writing. However, there are additional activities which might help to increase the probability that the journal accepts the submission:

- Look at other articles published where you intend to submit. Other articles might give an indication regarding the preferred style of writing, argumentation, research methods, etc.

- Ensure that your work is within scope. Scope and preferred topic usually are defined on the journal's homepage.
- Check any guidelines given by the journal and follow them (e.g. templates, maximum length of the paper, style of citation, etc.).
- If you know people involved in the journal's editorial board, it could be an idea to discuss the intended submission before actually sending it to the journal. This might give interesting feedback.
- Make your objective of submission explicit. What is it that you want to achieve with the submission? Is the content of the paper supporting this objective?

Step 2: Submission and Screening. After the submission of your paper, usually via an online submission system, the paper is managed by the editorial staff of the journal. Often there is one Editor-in-Chief supported by several associate editors, track editors or subject area editors. On submission, the article often is forwarded to Editor-in-Chief who does initial check of the article (screening):

- Is the paper within scope of the journal?
- Does the article fulfill basic requirements of an article, for example abstract and conclusions?
- Was it already published in another publication channel (or something too similar)?

An article that passes the screening is usually assigned to an area, track or subject field of the journal with its associate editor who becomes the handling editor for the paper.

Step 3: Finding Reviewers. Most journals have a pre-defined group of reviewers for their subject areas or tracks. However, these reviewers work on a voluntary basis, do not receive payments for their work and sometimes are not available due to other obligations. Thus, finding reviewers can be a process that takes time. The handling editor selects reviewers and invites them via an e-mail from the online submission system. Some journals settle with two reviewers, other journals use three reviewers. The reviewers hopefully respond to the invitation and hopefully accept it. Depending on the journal, the reviewers get 3 to 8 weeks to perform the review. Reminder is sent if the reviewer is late. The feedback to authors may be delayed because reviewers are not responding or delivering on time.

Step 4: Review. During the review, most journals and their reviewers evaluate papers regarding the aspects novelty, technical quality, clarity of presentation and importance of the work for the field. The reviewers are expected to judge the papers for these aspects on a defined grade scale, e.g. excellent, good, fair and poor. Comments to the authors to help improving the paper (if necessary) is an important part of review work. Furthermore, reviewers are expected to look for similar publications, i.e. authors should not try to re-publish work or use too much from a previous paper. In case of similar previous publications, authors should cite their own work and explain the relation.

Step 5: Decision. As a final result, a reviewer proposes to accept the paper as it is, to perform minor revisions or major revisions; or to reject the paper. Since there are several reviewers with sometimes different final results, the handling editor will look at the comments and in particular the severity of the comments, weigh different reviewers' comments against each other (in particular if there conflicting reviews),

and weigh the reviewers' recommendations against each other. If it is not possible to take a decision, the handling editor might need to invite an additional reviewer or to perform an own review. Finally, a decision e-mail is sent to the author(s).

Step 6: Revision. In case the decision is "minor revision" or "major revision", the authors needs to improve the paper to make it publishable. Based on the comments and recommendations in the reviews, the author should improve the paper and write a review response letter which explains how the different comments have been treated, i.e. authors should explain what has been done, but also explain and motivate why some comments might not have been considered. When the paper is re-submitted in a revised version, the handling editor in most cases tries to decide based on the new version and the review response letter. In some cases, reviewers are re-invited.

Step 7: Publication. If the paper has reached the "accept" status, the handling editor makes a recommendation to publish the paper and the Editor-in-Chief finally decides. The actual publication process often happens in an organization unit which is independently organized from the editorial team. This unit produces of the final layout and typesetting of the article, handles the copyright forms, puts together an issue of the journal with input from the Editor-in-Chief, provides proofs to the author(s), manages pre-prints orders, and publishes the actual electronic and printed issues of the journal.

5 Summary

The intention of this paper is to provide information about publication opportunities for PhD students who are not very experienced in publishing. This includes different publication channels, the role of bibliometrics in selecting a channel, typical review processes for journals and the motivation for publishing in general. This paper cannot be more than a piece of advice which always should to be complemented with guidance from the supervisors of a PhD student.

Some guiding questions to PhD students
When starting PhD work, one of the first questions after having selected the PhD topic might be:
- Who is working on similar topics? At what conferences are the results published?

This is where you should go and try to position your first publications!
Furthermore, you might want to discuss two questions with your supervisor:
- Are there any formal requirements how many publications and what kind of publications (journal, conference) are required for a PhD degree?
- Is resource distribution to the research unit or evaluation of the quality of research based on bibliometric indicators? If so, what publication channels and what kind of publication should be preferred?

The answers to these questions might help in selecting publication channels.

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