

OPEN ACCESS AVAILABILITY OF ARTICLES BY NORDIC AUTHORS

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Introduction

Open access availability to scientific publications has been discussed to a large extent during the last decade. Within the narrow sector of Nordic scholarly publishing activities like workshops and projects have been financed and organized by among others the Nordbib program¹. One of the projects financed by Nordbib in 2009 was the “OA-barometer”, a project where the aim was to quantitatively measure the open access availability of scientific articles. The project was mainly targeted towards a global view of open access availability of articles and was carried out by a research group lead by Bo-Christer Björk from Hanken School of Economics, Helsinki, Finland. The main results were reported in (Björk, Welling, Laakso, Majlender, Hedlund and Gudnasson 2010).

A secondary goal for the project was to study the Nordic countries, and the results from this regional study of availability of articles published by Nordic authors will be reported here. The Nordic countries are interesting in several ways since they form a geographical area with a common historic background and strong similarities in respect to culture and scientific research infrastructure.

Scientific publishing and open access in the Nordic countries have been studied also in reports commissioned by the Nordbib programme (Hedlund and Rabow 2007; Rabow 2009). The reports consist of country overviews and discussions on main topics within the area of open access publishing. Strategies and policy issues to be taken into account by the stakeholders in scientific publishing are included but also more practical issues like copyright, quality assurance, long term preservation and the development of OA repositories.

Whenever scholarly journal publishing and open access in the Nordic context is discussed an issue of almost immediate concern is the language aspect and the differences in publishing patterns between the

science, technology, medicine sector and arts, humanities, social sciences sector. In a study examining several aspects of journal publishing in the Nordic countries Hedlund and Rabow (2009) report on the present state of for example open access publishing as well as the challenges for the future of small Nordic journals. The visibility of research results published in the Nordic languages in indexing services and large international databases is poor (Hedlund & Rabow 2009). On the other hand there is fast development within the area of open access in the Nordic countries, which reports from many ongoing projects reported among others in the journal ScieCom Info bear witness to.

Research funding bodies and universities are increasingly requiring that research results should be openly available when funded by public resources. It seems evident that there is a request for case studies on open access implementation in the Nordic countries following the example of for example the one presented by Chris Armbruster (Armbruster 2010).

Outline of the study on OA availability of articles by Nordic authors

When evaluating the results of implemented policy issues regarding OA, the open free availability of research articles can be seen as one clear measure of development. Today the most widely used search tool for Internet is Google and it is also used as a tool by which researchers locate possible openly accessible articles. In principle Google scholar would be an alternative search tool to locate articles but in this study we limited the search tool to Google due to lack of resources and time. The method is thus imitating a researcher who after finding a reference is looking for a free copy available on the Internet. However, we have eliminated the possibility of using the university network for licensed copies as all searches have been done outside the university network.

The method we use to get a comprehensive picture of the availability of research articles is rather complicated and resource intensive specifically regarding manual labor for locating and analyzing article copies. The study is therefore limited to studying only one year, 2008, and the population we studied consists of

¹ NordBib funding programme for research and development in the area of Open Access to scholarly and scientific information at a Nordic level.

articles published during that year. To get the Nordic aspect the limitation is that only articles that had minimum one author from a Nordic country were included in the population. As a source for gathering the population we used the Scopus database, including a total of 1,2 million peer reviewed articles for that particular year. However, it also means that only articles published in English are included.

As the population of articles by minimum one Nordic author was too big to handle for all Nordic countries, except Iceland, a sample was used for location of openly available copies on the web. In Table 1, the second column shows the sample size for each country and the total sums up to 1216 articles. The researchers in the research group did the searching for article copies on the Internet manually. To aid in the data collection and analyzing of the search results a tool was developed in order to secure uniformity of the data. The Nordic study replicates the global study reported in (Björk et al. 2010) and in that paper the research method as well as research tool and the statistical sampling is reported in detail. To be noted in the present study is that the sample sizes on a country specific level, is only around 200 articles, which does not allow for statistically valid comparisons between the countries. To be noted is also that in the case of Iceland we were able to use the whole population of articles from the Scopus database published in 2008 with at least one author from Iceland. The results thus give a more reliable picture of the situation regarding Iceland.

Results from the study

The results from the study show a slightly better result for the availability of articles where at least one author is from one of the Nordic countries compared to the results for the global OA situation in (Björk et al. 2010). The results in the global study report a total OA availability of 20,4% (margin of error +2%). In this study the results reported in Table 1 show the OA availability separately for all the Nordic countries. When calculating the total results, the publication volume in each country has been taken into account.

Country	Sample size	Gold OA %	Green OA %	Total OA %
Norway	175	11,6%	6,9%	18,5%
Finland	213	10,5%	10,6%	21,1%
Sweden	199	11,4%	11,2%	22,6%
Denmark	199	6,2%	19,1%	25,3%
Iceland	430	10,9%	18,6%	29,5%
Total	1216	10,1%	12,1%	22,2%

Table 1 Found OA-copies (either gold or green) in the Nordic countries, where the publishing year was 2008 and at least one author was from a Nordic country. (source: Björk, B-C. 2010)

The total availability is split into two categories; “gold OA” - direct open access journal publishing, and “green OA” - free copies of articles posted on Internet sites. Looking at the results from this aspect there are clear differences between the home countries of the authors. In for example Iceland and Denmark green copies are clearly dominating over the gold alternative. As a note to the reader the results do not show if both alternatives (gold and green) are available for one single article. If a gold copy was found on the Internet the searching was stopped at that point and only if that was not the case, the search for green copies started.

In Table 2, the distribution of gold OA copies is split into three categories; direct open access journal; delayed open access journal; and open access article (for example by author paid OA to a single article). Open access journal is clearly the major category, while single open access articles are rather infrequent.

Distribution of gold OA	%
Direct open access journal	53
Delayed open access journal	35
OA article	12

Table 2 Distribution of the total Nordic level gold OA into the categories

For a closer study of the found green copies the data was categorized according to type of copy; exact copy; personal version and preprint version. The results are shown in Table 3. In most cases the exact copy was found which might be a bit surprising. However the exact copy is also the most valuable item for a person trying to get access to a specific article. Preprint versions are not as likely to be found and again the personal version is the one that most journals allow the authors to post in an institutional archive.

The distribution of green copies can also be categorized according to the type of web site that the author has posted it on (Table 4). Even though the institutional web sites and repositories are growing rapidly in number they still have not gained the popularity of other web sites (mostly own home pages) among researchers. Subject-based web sites are popular and a tradition in certain research disciplines like physics and medicine. In this study Arxiv, PubMedCentral, Wopec and eprints were well represented.

Distribution of green OA copies depending on type of copy found	%
Exact copy	47
Personal version	29
Preprint version	23

Table 3 *Distribution of the total Nordic level green OA into the categories*

Distribution of green OA depending on type of web site	%
Institutional repository	19
Subject-based repository	32
Other web site	49

Table 4 *Distribution of the total Nordic level green OA copies into type of web site where it was posted.*

Conclusion

In the present study we have tried to establish the level of openly available peer reviewed article copies, published in 2008, where at least one author is from a Nordic country (Finland, Sweden, Norway, Denmark and Iceland). In contrast to studies on open access journals and their development, this study is trying to answer the question from the article point of view in the same way a researcher looking for a copy of an article reference would do. The first step would be to use the search tool Google and type in the article title and browse through the list of hits for an available copy.

As a result of the study the percentage of the articles where a free copy could be found was calculated for each Nordic country. The distribution between “gold” open access copies and “green” open access copies varies between countries. In the case of Iceland and

Denmark “green” copies are more common. As a result of the study we can also establish that the situation regarding open access development in the Nordic countries is somewhat ahead of the results found in the respective global situation.

In order to get more detailed information about the situation for different scientific areas and languages, studies with larger samples and also several sources of data should be included. Also a combination of several search engines and harvesters could ensure that more openly available copies might be found.

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