

Impact and visibility of Norwegian, Finnish and Spanish journals in the fields of humanities

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Abstract

This article analyses the impact and visibility of scholarly journals in the humanities that are publishing in the national languages in Finland, Norway and Spain. Three types of publishers are considered: commercial publishers, scholarly society as publisher, and research organizations as publishers. Indicators of visibility and impact were obtained from Web of Science, SCOPUS, Google Metrics, Scimago Journal Rank and Journal Citation Report. The findings compiled show that in Spain the categories "History and Archaeology" and "Language and Literature" account for almost 70% of the journals analysed, while the other countries offer a more homogeneous distribution. In Finland, the scholarly society publisher is predominant, in Spain, research organization as publishers, mostly universities, have a greater weighting, while in Norway, the commercial publishers take centre stage. The results show that journals from Finland and Norway will have reduced possibilities in terms of impact and visibility, since the vernacular language appeals to a smaller readership. Conversely, the Spanish journals are more attractive for indexing in commercial databases. Distribution in open access ranges from 64 to 70% in Norwegian and Finish journals, and to 91% in Spanish journals. The existence of DOI range from 31 to 41% in Nordic journals to 60% in Spanish journals and has a more widespread bearing on the citations received in all three countries (journals with DOI and open access are cited more frequently).

Keywords Humanities journals \cdot Journals evaluation \cdot Norway \cdot Finland \cdot Spain \cdot Visibility indicators \cdot Impact indicators



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Introduction

Science is largely consolidated and bolstered by its dissemination through peer-reviewed academic journals, which act as vehicles for the transmission of research results and academic discussion (Fawcett & Fawcett, 1995; Gu & Blackmore, 2017; Liu et al., 2018). In the Social Sciences and Humanities (SSH) sphere, where publication patterns diverge from those of the experimental sciences, journals are also becoming increasingly influential as the main means of outreach and discussing research (Hicks, 2004; Archambault et al., 2006; Nederhof, 2006; Engels et al., 2018; Kulczycki et al., 2018, 2020). This fact has led SSH to consider that certain quality dimensions of journals, such as impact and visibility, can also be measured by considering their inclusion in international citation indices such as Web of Science (WoS) or SCOPUS, and that some or several of their bibliometric indicators could be used as quality indices (Dorta-González & Dorta-González, 2013; Ferrara & Bonaccorsi, 2016; Aledo et al., 2018).

However, recent research (Pölönen et al., 2020) suggests that it is necessary to recognise journals other than those indexed in WoS and SCOPUS owing to the marked bias towards more scientifically active countries and since numerous researchers publish their work in quality journals not indexed in these databases (Demeter, 2017; Sasvári et al., 2019). Conversely, Sivertsen and Ochsner (2016) points out that, 'coverage in a commercial indexing service should not be used as a criterion for research quality or an indicator of internationalisation in SSH'. In order to consider other journals not indexed in the above-mentioned databases, it is imperative for them to meet quality criteria based on expert opinion and compliance with formal objective criteria. To ascertain the relative position of each journal in its thematic area, it is paramount to categorise or order them according to the score obtained during evaluations. Categorised lists of journals ordered in terms of quality criteria offer numerous practical applications, both academic and professional (Pölönen et al., 2020). In numerous European countries, national lists of publication channels support performance-based research funding systems allocating government funding to universities (Sivertsen, 2016b). They allow academics to communicate research results, determine their methodological consistency, stimulate scientific debate, and target them so that the best-suited journals can publish their work (Huang, 2016; Liu et al., 2018). Evaluators are given the opportunity to appraise professors and researchers who apply for academic promotion. It also benefits journal editors, research policy managers, information analysts and others for whom qualitative stratification measures given in scientific publications are useful (Moed, 2004; Jaeger et al., 2016; Huang, 2016).

A review of previous studies on the methodologies and techniques used for the evaluation of academic journals has allowed us to analyse certain initiatives performed in this area, amongst these feature: the combination of citation counts with the analysis of social networks to rank the journals (Bohlin et al., 2016; Rost et al., 2017); the integration of expert judgements with bibliometric indicators (Walters & Eck, 2012); statistical approaches to compare different citation-based journal classification metrics (Haley, 2017); journal classification models based on PageRank algorithms (Yu et al., 2017); the correlation between expert-based journal rankings and the impact factor and other quantitative indicators (Huang, 2016; Mahmood, 2017); and content-based classifications (Rafols & Leydesdorff, 2009).

In relation to the evaluation and classification of SSH journals, there have been initiatives worldwide that must be highlighted, such as the European Reference Index for Humanities and Social Sciences (ERIH PLUS), a service provided by the Directorate for



Higher Education and Skills, an executive agency under the auspice of the Norwegian Ministry of Education and Research (http://erihplus.nsd.no/). On the other hand, in some countries, for example France, Belgium, Poland, Italy, Taiwan, Norway, Denmark and Finland schemes have similarly been established to classify and rank SSH journals (Ahlgren et al., 2012; Ingwersen & Larsen, 2014; Hammarfelt & De Rijcke, 2015; Ferrara & Bonaccorsi, 2016; Pölönen et al., 2020).

Three grading and classification systems have been developed in Spain: RESH (Spanish Social Sciences and Humanities Journals), with more than 2,000 journals classified into four levels according to their quality (Giménez-Toledo et al., 2007); CIRC (Integrated Classification of Scientific Journals), which classifies more than 20,000 periodicals into four levels (Torres-Salinas et al., 2010); and Spanish Foundation for Science and Technology (FECYT) ranking, which published in 2020 the Ranking of Visibility and Impact of Spanish Scientific Journals in the Social Sciences and Humanities with the FECYT quality seal (Sanz-Casado et al., 2017; Sanz Casado et al., 2020; De Filippo et al., 2020). This system classifies and ranks around 400 Spanish journals of all disciplines and 184 from humanities that have previously obtained quality certifications.

Purpose

A large number of journals in the humanities area are domestic publications; still for researchers in this area it is essential to have this type of journal to publish their research results, since many of them place the onus on locally relevant research. This type of journals differs from international journals in numerous significant respects: they are sometimes published by national publishers though rarely by large international commercial publishers. They are often published in languages other than English, thus meaning they may not be indexed in international databases like WoS and SCOPUS. Therefore, both evaluators and researchers face difficulties in assessing different qualities dimensions of these journals, such as their visibility and their actual or potential impact on the scientific community.

Journals are able to foster their potential impact by providing open access and by using persistent identifiers to facilitate dissemination, interoperability and discovery of outputs and citations. Earlier research from Finland shows that a vast majority of scholarly journals are published by independent publishers, notably learned societies (Late et al., 2018). Learned societies as well as research organisations typically rely on transient and voluntary work by researchers to support their publishing operations. In Finland, learned societies published fewer open access journals than research organisations, while commercial publisher play a highly limited role. In Norway, one large and three smaller national publishers command the field on one hand, while the eight largest universities and higher education institutions providing open journal systems (OJS) platforms for publishing open access journals form the other side. A study into DOAJ journals has highlighted that commercial publishers are notably more capable of meeting high technical open access requirements for example through cOAlition S research funders (Frantsvåg & Strømme, 2019). There is no earlier research comparing the landscape, visibility and impact of national Humanities journals from different countries.

In this regard, this study's purpose is to compare the humanities journals published in three countries (Norway, Finland and Spain) predominantly in the national languages based on field and the type of publisher (commercial, institutional research organization



or scholarly society), based on bibliometric analysis of average citation counts per journal from WoS and SCOPUS, and based on open access and DOI availability. Our specific research questions are:

- 1. How does the scholarly publishing landscape of humanities journals differ between Finland, Norway and Spain in terms of areas of knowledge and publisher type?
- 2. How are the humanities journals from the three countries represented in the international databases WoS and SCOPUS in terms of the share of journals indexed and the number of citations received?
- 3. How have large share of the humanities journals from the three countries adopted the open access publishing model and the use of Digital Object Identifiers (DOI)?
- 4. Does open access publishing and DOI availability increase the representation and impact of humanities journals from three countries in WoS and SCOPUS databases?

Methodology

The selection of journals has been carried out considering the quality criteria established by experts pertaining to the Evaluation Agencies of each of the countries in different areas of Humanities. In the case of Spain, 184 journals included in the analysis correspond to Humanities that have obtained the FECYT Quality Seal in the most recent call. The evaluation procedure to obtain the Quality Seal consists of two phases. In the first phase, the editorial and scientific quality of the journals is evaluated, while in the second phase, the journals that have passed the first procedure must pass a qualitative evaluation carried out by a panel of experts from the journal's subject matter. Journals that pass the two evaluation processes will obtain a quality seal valid for three years.

The selection of Norwegian journals includes journals classified under the fields of humanities in The Norwegian Publication Indicator frequently used by Norwegian researchers, while at the same time are rated at level 1 or 2 in The Norwegian Registry of Scientific Journals, Series and Publishers. For a level 1 or 2 rating in the registry, the journal must have established routines for external peer review: they need to feature an academic editorial board and international or national authorship. In this dataset the term "frequently used" is understood as journals that have received a minimum of three author shares from Norwegian researchers throughout the 5-year period 2014–2018. A publication is fractionalised into author shares if there are several researcher's collaborating on a publication. For example, if there are two authors involved in a publication, and one of them is Norwegian while the other one is from outside Norway, this counts as 0.5 author shares in this data collection.

In the case of Finland, the humanities journals are selected for this study based on their approved status as scholarly peer-reviewed journals indicated by their inclusion at level 1 or 2 in the national Publication Forum list of publication channels (Pölönen et al., 2019). Humanities journals have been identified based on their Publication Forum evaluation panel (20–23 lists of panels), excluding those serials that are registered in the international ISSN Centre as monographic series. The selected journals needed also to contain at least 4 publications in Finnish or Swedish (Finland's national languages) in the period 2011–2017 reported in the national publication database (VIRTA publication Information Service),



Table 1	Thematic classification
of analy	sed publications

OECD CODE	Thematic category
6.01	History and archaeology
6.02	Languages and literature
6.03	Art
6.04	Philosophy, ethics and religion
6.05	Other humanities

Table 2 Sources of information and indicators

Sources	Indices	Indicators
Web of science (WoS)	Science Citation Index (SCI) Social Science Citation Index (SSCI) Arts and Humanities Citation Index (AHCI) Emerging Sources Citation Index (ESCI)	No. of citations H-index
	Journal Citation reports (JCR)	Quartiles
SCOPUS database		No. of citations
Scimago Journal Rank (SJR)		H-index Quartiles
Google Scholar Metrics (GSM)		H-index

with the share of national language outputs during the period standing at a minimum of 50%.

We used the following methods to analyse and compare the Humanities journals from Finland, Norway and Spain, countries that have provided primary backing to promoting the quality of their national journals.

First, the humanities journals were graded into thematic categories using the field categories provided by the OECD. In this way, given the thematic diversity of the journals that comprise the Humanities area, the disciplinary disaggregation proposed by the OECD has been used in 5 areas of knowledge to improve this grading, as displayed in Table 1.

To contextualise the journals of the three countries, we also identified the type of publishing body: Commercial (private publishers), Scholar Society (journals published by professional, cultural or social associations), and Institutional (research organization as publishers: universities, research centres, government agencies, etc.).

We also obtained indicators of visibility and impact of the journals in the sources of information presented in Table 2.

The origin of these methodological procedures has been obtained from the work of De Filippo et al. (2020). In this study, the selection of the "citation window", that is the timeframe in years required for citations to be quantified, is a fundamental decision for consideration. In other words, the slower pace of the citation process in the Humanities compared to other subject areas in the scope of natural sciences, life sciences, etc. In this regard, certain studies have concluded that in subject areas in which the citation dynamics is slower, the standard period of 2 years is overly short for most publications to be recognised and cited (Vanclay, 2012; Campanario, 2011; Waltman & Van Eck, 2012; Dorta-González & Dorta-González 2013). Indeed, the Journal Citation Reports of Web of Science introduced the five-year Journal Impact Factor in 2007 to complement the short-term



two-year impact factor (Jacsó, 2010). In this study, therefore, we have similarly opted to use a 5-year citation window. To measure impact, the number of citations that the selected journals received from publications indexed in Web of Science and SCOPUS was gathered. To accomplish this, the "cited reference search" tool was used. The name and variants of the journal were searched for in the "cited work" field with the search being limited to the last 5 years in "cited year(s)". Another impact indicator obtained was the H-index. For this purpose, the values obtained by each journal in Web of Science, in the Scimago Journal Rank (SJR) and in Google Scholar Metrics over the last 5 years were consulted.

Finally, the open access status of all the journals was similarly investigated, based on the existence of Open Access, as well as the presence of digital object identifier (DOI). Open Access journal was defined as journal publishing all peer-reviewed contents online on a platform or a publisher website with admission to their contents being free to the user. For all three countries, the identification of the open Access journals was based on the inclusion of journals in DOAJ (https://doaj.org/) and Bielefeld list (https://www.uni-bielefeld.de/ub/digital/oa/index.xml). In the case of Spain, journals also included in Dulcinea (https://www.accesoabierto.net/dulcinea/) which follows the SHERPA/ROMEO taxonomy, were counted as open access journals. With regard to Finland, open access journals also include journals that are hosted on the national Journal.fi platform, alongside certain other identified open access journals that publish peer-reviewed articles immediately online. For Norway, open access journals also include journals published on websites belonging to institutions and societies, on which peer-reviewed articles may be accessed immediately online, without hindrance. Information on the existence of DOI was collected from the web pages of the journals themselves.

Results

General characteristics of humanities journals

The total number of journals compiled was 282, of which 58 were published by Finnish, 40 by Norwegian and 184 by Spanish publishers (Table 3). The distribution by thematic categories shows that Finland and Norway feature relatively similar profiles, without overly divergent percentages in four of the five categories. In Spain's case, there is a predominance of the journals in *Language and Literature and History and archaeology*, which together comprise 75% of the titles (compared to around 50% in Finland and Norway) (Table 3).

Table 3 Number of journals by thematic category of the three countries

OCDE thematic category	Finla	nd	Norv	vay	Spain		Total	
Art	11	19%	5	13%	9	5%	25	9%
History and archaeology	17	29%	9	23%	64	35%	90	32%
Language and literature	12	21%	12	30%	74	40%	98	35%
Philosophy, ethics and religion	13	22%	9	23%	18	10%	40	14%
Other humanities	5	9%	5	13%	19	10%	29	10%
TOTAL	58	100%	40	100%	184	100%	282	100%



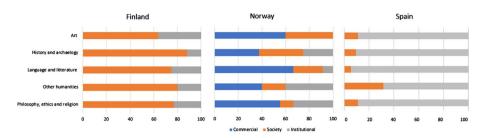


Fig. 1 Publisher type by country and thematic category (percentages)

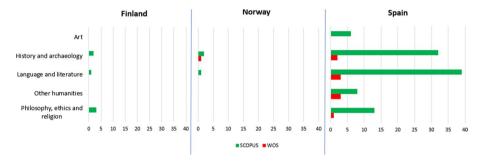


Fig. 2 Number of journals included in the databases WoS or SCOPUS broken by country and thematic category

Regarding the type of publisher, in Finland most of the journals are published by Scholarly Societies, especially in the thematic category History and Archaeology with almost 90% of the journals. In turn, in Norway commercial publishers come to the fore, the category with the highest percentage is Language and Literature, accounting for almost 67% of journals. Finally, in Spain the publishers with a greater number of journals are institutional (research organization generally attached to public universities). The thematic category of Language and Literature is the one that obtains the highest percentage (94.5%) (Fig. 1).

Analysis of the journal impact

The degree of indexation of the journals analysed in the international databases shows that overall, Web of Science indexes merely 4% of the humanities journals from the three countries. The coverage of SCOPUS is considerably larger, as it includes 38% of the journals (Fig. 2). The analysis also shows, however, that even in the case of SCOPUS, the journals covered are predominantly from Spain. In Finland's case, none of the humanities journals are included in Web of Science and 6 journals (10%) are included in SCOPUS. In Norway, there is only one journal included in WoS (3%) and three titles indexed in SCOPUS (8% of the total number of journals analysed in this country). In Spain, there are WoS-indexed journals in all subject categories, with the exception of Art, with nine (5% of the total) included in this database. The number of journals increases considerably in SCOPUS, with more than half of the Spanish journals analysed, indexed in this database (Fig. 2).

With a view to ascertaining the journals' impact in the three countries, citations received from the three different databases were considered (although many of the journals



OECD		FIN	LAND			NO	RWAY			SI	PAIN	
CATEGORY	WoS cts/jnl	ESCI cts/jnl	SCOPUS cts/jnl	Total cts/jnl	WoS cts/jnl	ESCI cts/jnl	SCOPUS cts/jnl	Total cts/jnl	WoS cts/jnl	ESCI cts/jnl	SCOPUS cts/jnl	Total cts/jnl
Art	0.91	0.64	1.64	3.18	3.40	1.20	2.80	7.40	22.33	14.33	16.67	53.33
History and archaeology	1.41	0.88	5.12	7.41	8.22	0.78	9.00	18.00	38.03	20.87	24.13	83.03
Language and literature	4.75	1.67	9.00	15.42	2.17	0.83	2.92	5.92	19.49	12.53	12.88	44.89
Philosophy, ethics and religion	1.23	1.23	3.92	6.38	1.89	2.00	3.00	6.89	28.72	12.78	27.33	68.83
Other humanities	0.40	1.40	3.60	5.40	6.20	1.80	7.40	15.40	21.68	14.63	19.63	55.95

Table 4 Citations per journal in the three databases by country and thematic category

The subject area with the greatest impact in each country is shown in bold. In green the highest values of citations per document in each country and in red the lowest

analysed are not indexed in these databases, citations received from other journals included therein were also collected). Table 4 shows the average number of citations per journal in each discipline, database and country. The discipline that achieves the highest impact in each country has been highlighted in bold and, represented by colour scale, the database with the highest average number of citations in each subject area, with the highest values being displayed in green and the lowest in red. As can be seen, in Finland, *Language and Literature* is the discipline that is the most far-reaching with an average of 15 citations per journal. In Norway and Spain, the highest number of citations received occurs in the subject area of *History and Archaeology*, with 18 and 83 citations per journal respectively. On a nationwide level, Spain is at the fore with much greater impact than the other two countries, while, when broken down by database, SCOPUS stands out in Finland and Norway (with the exception of *Art*, which for Norway has a significant impact on WoS). In Spain, the distribution of citations by database is more homogeneous than in other countries, yet the impact received from journals indexed in Web of Science is worthy of special mention.

Other aspects of impact analysed include the h-index. Due to the low coverage of national journals indexed in international databases, in Finland and Norway there are no publications with H-index in Web of Science (bearing in mind that the scant indexed journals belong to areas of Humanities in which the JCR does not exist). With regard to Finland, only three disciplines feature this indicator in SJR whose values are, in all cases < 1, while in Google Scholar Metrics there are H-index for four disciplines with the highest value in *Language and Literature* that reaches 1. On the other hand, in the case of Norwegian journals, there is H-index in 2 SJR disciplines, with values also lower than 1 and only *History and Archaeology* unearths data in Google Scholar Metrics although with very low figures. With regard to Spain, this is highly different when displaying H-index values in all disciplines of the three databases with values higher than 1. It is in Google Scholar Metrics where the highest impact values are evident with figures that are between the score of 2.5 in *Language and Literature* and 3.9 in *Philosophy, Ethics and Religion* (Table 5).

Visibility indicators

With regard to the presence of the journals in the SCOPUS quartiles, it is observed that the results for the three countries are vastly different from the JCR values. Finland has six journals in this database (10.3%), most of them in the Philosophy, Ethics and Religion



Table 5 H-index of the journals in the three databases by country and thematic category

OECD category	Finland			Norway			Spain		
	H-Index WoS	H-Index WoS H-Index SJR H5-Index (Google S Metrics)	H5-Index (Google Scholar Metrics)	H-Index WoS	H-Index WoS H-Index SJR H5-Index (Google S Metrics)	H5-Index (Google Scholar Metrics)	H-Index WoS	H-Index SJR	H-Index WoS H-Index SJR H5-Index (Google Scholar Metrics)
Art	0.00	0.00	0.00	0.00	0.00	0.00	1.67	1.67	3.89
History and Archaeol- 0.00 ogy	0.00	0.18	0.35	0.00	68.0	0.11	1.55	2.19	3.72
Languages and Litera- 0.00 ture	0.00	0.33	1.00	0.00	0.17	0.00	1.32	1.69	2.54
Philosophy, Ethics and Religion	0.00	0.46	0.62	0.00	0.00	0.00	1.61	2.39	3.94
Other Humanities	0.00	0.00	0.40	0.00	0.00	0.00	1.68	2.32	3.47



OCDE category	Finl	and			Nor	way			Spai	n		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Art	_	_	_	_	_	_	_	_	1	1	3	1
History and Archaeology	_	1	_	1	_	_	1	1	5	9	10	8
Languages and Literature	_	_	1	_	_	_	1	_	5	14	14	6
Philosophy, Ethics and Religion	_	2	_	1	_	_	_	_	1	1	6	5
Other Humanities	_	_	_	_	_	_	_	_	1	4	_	2
TOTAL	-	3	1	2	-	-	2	1	13	29	33	22

Table 6 Number of journals per SCOPUS quartile by country and thematic category

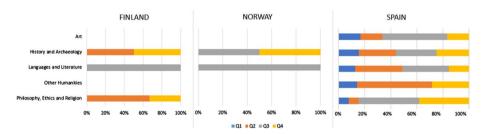


Fig. 3 Distribution of journal quartiles in SCOPUS database broken down by country and thematic category

category; three of them are in Q2. Norway, in turn, has three journals in SCOPUS (7.5%), two of them in the History and Archaeology category, though in the quartiles three and four. In the case of Spain, 98 journals are present in SCOPUS (53% of the total), most of them are in the second and third quartile (29 and 33 respectively) (Table 6). Figure 3 shows the percentage distribution of journals by quartile, subject area and country.

Insomuch as the presence of the journals of the three countries in JCR quartiles, only nine Spanish journals have been included in this database, mostly (6) in the fourth quartile.

Open access

Considering the distribution of open access journals by category and country, Art reach 100% in Norway and Spain, while in Finland they do not reach 64%. The lowest percentages of open access have been recorded in Other humanities areas (in Spain), History and Archaeology (in Finland) and in Language and Literature (in Norway), while in the disciplines of the three countries they exceed 50%, except in Other humanities areas in the case of Spain, where the percentage is lower than the other ones (Table 7).

With regard to the presence of DOI in the journals, the case of Spain stands out, with percentages ranging from 37% (in Other Humanities areas) to 72% (in Philosophy, ethics and religion). In Finland, only Language and Literature journals exceed 50%, and in Norway the highest percentages were found in Other Humanities areas (60%) (Table 8).

The total percentage of open access journals stands at 82.56%. However, the contribution to this amount differs vastly according to the publisher type. Research organization publishers surpass this percentage, since 90% of the journals they edit are open



Table 7 Percentage of open access journals by country and thematic category (OCDE classification)

Thematic category	Finland	Norway	Spain	Total
Art	63.63	100	100	84
History and archaeology	41.20	87.50	100	87.64
Language and literature	100	50	100	93.87
Philosophy, ethics and religion	53.84	55.55	100	75
Other humanities	80	80	15.78	37.93
All fields	63.79	69.23	91.30	82.56

Table 8 Percentage of journals with DOI broken down by country and thematic category

Thematic category	Finland	Norway	Spain	Total
Art	45.40	40	66.60	52
History and Archaeology	17.60	50	67.18	56.18
Language and Literature	58.30	25	55.40	52.04
Philosophy, Ethics and Religion	15.40	44.40	72.22	47.5
Other Humanities areas	20	60	36.84	37.93
All fields	31.34	41.02	59.78	51.24

Bold values show the most important disciplines in each country

Table 9 Number of journals with DOI by type of publisher

Indicator	Society	Institution	Commercial	Total
Open access journals	44 (61.11%)	170 (90.42%)	18 (85.71%)	232 (82.56%)
Journals with DOI	21 (29.16%)	110 (58.51%)	13 (61.90%)	144 (51.24%)

access. This high percentage is due to the weight of Spanish publishers, most of which are institutional. Commercial publishers, represented in this study only by the Norwegian journals, similarly contain a high share of open access documents, with 86%. On the other hand, the lowest percentage of open access journals is found amongst the journals published by scholarly societies, with solely 61% of these being open access (Table 9).

Regarding journals with DOI, the total percentage is notably lower (51%) than in the case of open access (82%). DOI availability is more frequent in the journals published by the commercial and institutional publishers (62% and 59%, respectively) than in society journals (29%) (Table 9).

Another important aspect that must be analysed is the significance of the humanities journals of the three countries in terms of being open access or having DOI, in all the databases analysed (WoS, ESCI and SCOPUS). Overall, the open access journals receive a greater number of citations than subscription-based journals (48.20 visà-vis 22.45 citations/journal). Journals with DOI have also a larger average number of citations than journals without DOI (54.68 against 32.18 citations/journal). When the results are analysed in each of the countries, the same trend is observed in Norway, Finland and Spain (Table 10).



Table 10 Total citation count per journal from WoS, ESCI and SCOPUS

Indicator	Finland				Norway			
	WoS cts/jnl	ESCI cts/jnl	SCOPUS cts/jnl	Total cts/jnl	WoS cts/jnl	ESCI cts/jnl	SCOPUS cts/jnl	Total cts/jnl
Open access journals	2.27	1.19	5.46	8.92	5.57	1.53	6.36	13.46
Closed journals	1.19	1	3.81	9	0.75	0.58	1.33	2.67
Journals with DOI	3.33	1.11	6.05	10.5	6.94	1.7	8.05	16.7
Journals without DOI	1.22	1.12	4.32	6.67	2.04	0.91	2.48	5.43
Indicator	ls S	Spain						Total
	☎	WoS cts/jnl	ESCI cts/jnl		SCOPUS cts/jnl		Total cts/jnl	
Open access journals	27,	27.66	15.82		18.88		62.36	48.20
Closed journals	22	22.44	15.19		21.25		58.88	22.45
Journals with DOI	25	29.97	17.55		19.75		67.28	54.68
Journals without DOI	25	23.09	13.09		18.09		54.28	32.18



Table 10 also shows that the highest number of citations received by Finnish and Norwegian journals comes from SCOPUS, while Spanish journals receive the highest number of citations from WoS.

Discussion

National-based humanities journals from Finland, Norway and Spain appraised in this study have been evaluated and accredited in terms of quality by the evaluation agencies and committees operating in each of the aforesaid countries. The representation of journals from each country in this study is uneven, with Spain providing the largest number of journals (62%) of the total analysed. In this sense, several factors must be considered that justify this larger presence, including the size of the population of Spain nine times bigger than that of Norway or Finland.

When the distribution of each of the thematic categories of the three countries is scrutinised, it is observed that Language and literature is the area with the highest percentage of journals under analysis (with values that reach 40% of the journals in Spain), followed by History and archaeology.

Regarding the publisher type, the three countries unveil diverse scenarios. Finland and Spain could not be further apart. Society publishers dominate (90%) in all categories, although somewhat lower in the Arts (63%). In the case of Spain, institutional publishers prevail (93.9%), although in the Other Humanities area category their presence is slightly lower (79%). A previous study on the publication of scientific journals in Spain also found that almost 80% were published by institutions such as universities and research organisations, and that 70% received minor funding through institutional support (such as grants or financing from the rights' holder (Claudio-González et al., 2017). It is a peculiar feature of both Finland and Spain that none of the national Humanities journals are published by commercial publishers. In the case of Norway, the publication profile is more balanced, the three types of publishers issue a significant number of journals, although national commercial publishers provide the largest share (53%). In two of the thematic categories this presence is reduced (History and Archaeology at 37.5% and in Other Humanities areas at 40%).

When the presence of journals in the WoS and SCOPUS databases is analysed, the Spanish journals in the latter database are mainly focused on the category of Language and Literature, along with History and Archaeology, whereas Finnish journals feature more widespread presence in the category of Philosophy, Ethics and Religion, and the Norwegian journals in History and Archaeology. However, upon analysis of their impact, based on the citations received by the journals of the three countries in the databases considered in this study, the number of citations received for the Finnish and Norwegian journals is notably higher on SCOPUS than WoS or ESCI. In the case of Finland, the Language and Literature features a notably higher impact than the remainder, while for the Norwegian journals, the weighting is higher in the History and Archaeology category. Conversely, unlike the scenario in the other two countries, Spanish journals show provide greater numbers on WoS than on SCOPUS, and it is in the History and Archaeology category that journals receive a higher number of citations.

When the H-index values of the journals from the three countries are assessed, Finland and Norway show values for this indicator in SJR and Google Scholar Metrics. The values for Finnish journals are slightly higher in Google Scholar Metrics than in SJR in certain categories. In Philosophy, Ethics and Religion the value is higher in SJR, while in Google



Scholar Metrics it is higher in Languages and Literature. With regard to Norwegian journals, in general they purport higher H-Index values in SJR than in Google Scholar Metrics and it is in the History and Archaeology category where the value is higher in both cases. Spanish journals offer H-Index values in both JCR and SJR or Google Scholar Metrics, with these being higher in the latter. The category in which Spanish humanities journals obtain the highest H-Index in SJR and Google Scholar Metrics is Philosophy, Ethics and Religion. In JCR the H-Index is slightly higher in Other Humanities areas.

The visibility of the journals has been determined from different viewpoints. One of these is based on different quartiles of the SCOPUS databases, since JCR has scant dealings with these journals. In the case of Norwegian journals, their presence in SCOPUS quartiles is focused in two quartiles (Q3 and Q4). The Languages and Literature category has all the journals in Q3, while in History and Archaeology they are divided 50% into the two quartiles (Q4 and Q3). The distribution of Finnish journals is somewhat different, since there are three categories (History and Archaeology, Languages and Literature and Philosophy, Ethics and Religion) that have journals in three quartiles of SCOPUS (Q2, Q3 and Q4). In History and Archaeology Philosophy, Ethics and Religion, journals feature in Q2 and Q4, while in Languages and Literature, as in the case of Finland, all Norwegian journals are included in Q3. By comparison, Spanish journals containing all subject categories are present in all quartiles. The categories displaying the highest level of visibility (greatest number of journals in Q1) are Language and Literature, along with History and Archaeology.

When comparing humanities journals from Finland, Norway and Spain, it must be considered that the national journals from the Nordic countries notices their chances of impact and visibility diminished, since publications in vernacular languages reach a smaller audience. The case of Spanish journals is dissimilar, since the Spanish language is regarded as an international language and is widely spoken outside Spain, mainly in the Latin American countries meaning it would also be in the scope of interest for their scientific communities. Therefore, the number of possible citations is much higher than would be the case for the two Nordic countries. This probably also makes the Spanish journals more attractive for indexing in the commercial databases like SCOPUS and WoS.

Another perspective considered in this study, with a view to analysing the visibility of the humanities journals of the three countries, is based on their distribution in open access venues and DOI availability. In the former case, the percentage of Finnish and Norwegian journals that are published open access is 64% and 70% respectively, while the Spanish journals show a higher percentage (91%). Other studies have shown that although the experience of publishers with open access is mostly positive, many publishers claim amongst the main limitations, the scant financial resources and poor organisational structure (Claudio-González et al, 2017).

These very marked differences between the three countries may be related to the publisher type. In the case of Spain, the publisher type responsible for the largest number of journals is Institutional, specifically university publishers, however in Norway and Finland the publishers are Commercial in the first case and Scholarly society in the second. In this sense, one of the study's findings is that Society publishers account for the lowest percentage of journals distributed in open access mode. In Norway, the high open access share among journals of commercial publishers is facilitated by the national government programme for funding national humanities journals (Sivertsen, 2018). A previous study showed that in Finland, commercial publishers have the lowest share of open access journals (Late et al, 2018).



That said, when the total number of journals is analysed, a significant relationship is observed between a larger number of citations per journal and their distribution in open access. When broken down by country, this relationship occurs in all three countries especially in Norway, where the difference is higher. Another major difference between the humanities journals from the two Nordic countries and Spain is that in the case of Spanish journals, both in open access and subscription-based, they receive more citations in WoS than in SCOPUS, while in Norway and Finland it is in SCOPUS where a greater number of citations are received for their journals.

A possible explanation as to why the Norwegian open access journals receive more citations than non-open access one could be traced to the national funding model, which solely includes those journals that the research community themselves consider as the central or leading national journal in their research fields. Therefore, the selection of journals that are open access already were already highly regarded in their field before becoming open access, and when the model was evaluated in 2020 one result discovered was that the effect of flipping from subscription-based to open access was a marked increase in the numbers of downloads from these journals (UNIT, 2020).

In Finland, however the higher average citation counts of open access journals cannot be explained by the journals being at the fore of their sphere as is the case in Norway. The Federation of Finnish Learned Societies distributes government subsidies for the broad range of learned societies' journals, while it has also established a national platform to facilitate their open access publishing. There is not, however, a national open access funding model, unlike in Norway, that would compensate income potentially lost from subscriptions and membership fees, which are needed to sustain publishing operations. Consequently, open access in Finland is representative of the entire scope of humanities journals.

In Spain, the major impact of open access publications follows the trend evidenced in several previous studies that have shown how open access articles are more immediately recognised and cited by peers than non-open access articles published in the same journal (Eysenbach, 2006). Indeed, a recent study shows that the impact of Spanish university publications (in all disciplines) in open access is much higher than that of subscription-based publications (De Filippo & Mañana, 2020).

When analysing the percentage of open access journals, depending on the subject categories, it is observed that in the total of the three countries, the average value of the three categories is 82% of open access journals. However, when the values in each of the countries are evaluated on an individual basis, the lower percentages of open access journals are in the Language and Literature category in Norway (50%), in History and Archaeology (41.20%) in the case of Finland, and in Other humanities areas in Spain (15.78%). In this country, the percentage of open access journals in all categories is 100% except in Other humanities areas.

Regarding the availability of DOI in the journals, the percentages are lower than in the case of the open access distribution (51% vs 82%). The low percentages of journals with DOI may be due to the fact that some journal publishers still prefer print editions over digital ones, since the migration to the digital environment would mean some would have to relinquish the profits from publicity inserted into the printed copies. Many journals may also lack the knowledge of the advantages of using persistent identifiers and/or know-how to implement DOIs. Finnish journals obtain the lowest percentage of DOI (31%), Norwegian ones 41% and Spanish ones feature a higher percentage (60%). When the percentage of journals with DOI is analysed, depending on the thematic categories, it is observed that in the total of the three countries, the average value of the 5 categories accounts for 51% of journals. However, when analysing the values in each of the countries, the results of



this study stresses the low percentage of Norwegian journals with DOI in the category of Language and Literature (25%), along with the Finnish journals in Philosophy, Ethics and Religion (15, 40%) or in History and Archaeology (17.60%).

The results obtained in this work show that the existence of DOI in the journals has a major bearing on the citations received, and this effect is observed both in the SCOPUS and in WoS databases. Said effect is higher than that observed when the distribution of the journals is in open access, with this occurring over all three countries. This result demonstrates that it is advantageous, in terms of impact and visibility, for journals to publish open access and also to adapt to state-of-the-art technical standards in the sphere of open access publishing. This entails the use of persistent identifiers, such as DOI.

The methodology used in this study could be adapted to the collections of national journals dealing with any subject from any country. Its reproducibility is guaranteed since it uses data and indicators provided by widely available and easily accessible sources. The methodology of this work has been contrasted with experts in the field of scientometrics who have stated that it is not feasible to evaluate scientific journals in SSH using solely a one-dimensional view (Leydesdorff et al, 2016), and that it is thus necessary to use a sizable set of indicators.

From the outlook of diverse stakeholders, the implications of this study stress certain potential advantage to OA journals over subscription-based journals, and to journals featuring DOI over those without it. It must be remembered that for Finland and Norway especially, the findings are based on sources of citation data (WoS, Scopus and GS) that offer scant coverage of Finnish and Norwegian language publications. Furthermore, the number of journals is relatively small, so it is difficult to say to what extent the potential citation advantage can be explained by the status as OA-journals or the differences in journals' quality. For example, in Norway, the national OA plan has selected the most respected humanities journals to be flipped OA. Researchers probably should choose venues primarily based on quality and target audience, but our results may indicate that if the journals are equally respected for their quality in the research community, then choosing the OA model featuring DOI might be advantageous. For publishers, the implications of the study are perhaps clearer, in the sense that OA and especially DOI may increase visibility and facilitate citation tracking.

Conclusions

The results obtained from the analysis of the humanities journals of the three countries allow us to draw the following conclusions.

The first of them would be related to the thematic category of publication. In this sense, History and Archaeology and Language and literature are the two categories in which the largest number of journals are published.

Another interesting result obtained from this study is the difference observed in the publisher type of the humanities journals in the three countries. In Finland, the Society publisher is entrusted with editing most of the journals, whereas in the Spanish journals the type of publisher is Institutional, similarly in the Norwegian journals, although they are of all three types, the Commercial publisher is responsible for a larger percentage of journals.

Another result unearthed is the presence of humanities journals of the three countries in international databases is platry. The number of journals included in WoS or SCOPUS is low, mainly in the first database where the percentage of humanities journals from the



three countries is 4%. The presence in SCOPUS is somewhat higher, although it does not reach 40% through of all journals.

Finnish and Norwegian journals receive a greater number of citations from the journals included in SCOPUS than in WoS, while in the case of Spanish journals the opposite is true, the percentages are higher in WoS. Visibility is also reduced, since only 5% of the journals are in the first quartile of SCOPUS, with all of them being Spanish.

In general terms, the visibility and impact of Spanish journals is higher than those of Norway and Finland. In this sense, it is necessary to consider the more sizeable readership of Spanish journals whose content is disemminated in a language accessible to a greater number of readers.

The open access distribution also shows important differences between the three countries. In Spain, almost all of the selected journals are open access (91%), while in Norway and Finland this percentage does not exceed 70%. Society journals have markedly lower open access share than those published by institutions and commercial publishers. In all three countries the impact of journals in open access venues is higher than that of journals that are not, although this effect seems to vary considerably between the three countries

The percentage of journals with DOI in the three countries is much lower than those shown in their open access distribution. It has also been observed that the existence of DOI has a greater bearing on the impact of journals than its distribution in open access, since the average number of citations received by those with DOI is higher in the three countries.

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References

- Ahlgren, P., Colliander, C., & Persson, O. (2012). Field normalized citation rates, field normalized journal impact and Norwegian weights for allocation of university research funds. *Scientometrics*, 92, 767–780.
- Aledo, J. A., Gamez, J. A., Molina, D., & Rosete, A. (2018). Consensus-based journal rankings: A complementary tool for bibliometric evaluation. *Journal of the Association for Information Science and Technology*, 69(7), 936–948.
- Archambault, E., Vignola-Gagne, E., Cote, G., Lariviere, V., & Gingras Y, Y. (2006). Benchmarking scientific output in the social sciences and humanities: the limits of existing databases. *Scientometrics*, 68(3), 329–42.
- Bohlin, E., Lancichinetti, A. V., & Rosvall, M. (2016). Robustness of journal rankings by network flows with different amounts of memory. *Journal of the Association for Information Science and Technology*, 67(10), 2527–2535.
- Campanario, J. M. (2011). Empirical study of journal impact factors obtained using the classical two-year citation window versus a five-year citation window. Scientometrics, 87, 189–204.
- Claudio-González, M. G., Martín-Baranera, M., & Villarroya, A. (2017). La edición de revistas científicas en España: Una aproximación descriptiva. Anales De Documentación. https://doi.org/10.6018/anale sdoc.20.1.265771.



- De Filippo, D., Aleixandre-Benavent, R., & Sanz-Casado, E. (2020). Toward a classification of Spanish scholarly journals in social sciences and humanities considering their impact and visibility. *Scientometrics*. https://doi.org/10.1007/s11192-020-03665-5
- De Filippo, D., & Mañana-Rodríguez, J. (2020). Open access initiatives in European universities: Analysis of their implementation and the visibility of publications in the YERUN network. Scientometrics, 1–28.
- Demeter, M. (2017). The core-periphery problem in communication research: A network analysis of leading publication. Publishing Research Quarterly, 33(4), 402–420.
- Dorta-González, P., & Dorta-González, M. I. (2013). Comparing journals from different fields of science and social science through a JCR subject category normalized impact factor. Scientometrics, 95, 645–672.
- Engels, T., Starčič, A., Kulczycki, E., Pölönen, J., & Sivertsen, G. (2018). Are book publications disappearing from scholarly communication in the social sciences and humanities? Aslib Journal of Information Management, 70, 6.
- Eysenbach, G. (2006). Citation advantage of open access articles. PLOS Biology, 4(5), e157. https://doi.org/ 10.1371/journal.pbio.0040157
- Fawcett, S. E., & Fawcett, S. A. (1995). The firm as a value-added system: integrating logistics, operations and purchasing. *International Journal of Physical Distribution and Logistics Management*, 25(5), 24–42.
- Ferrara, A., & Bonaccorsi, A. (2016). How robust is journal rating in social sciences and humanities? Evidence from a large-scale, multi-method exercise. *Research Evaluation*, 25(3), 279–291.
- Frantsvåg, J. E., & Strømme, T. E. (2019). Few open access journals are compliant with plan S. Publications, 7, 26. https://doi.org/10.3390/publications7020026
- Giménez-Toledo, E., Román-Román, A., & Alcaín-Partearroyo, D. (2007). From experimentation to coordination in the evaluation of Spanish scientific journals in the Social Sciences and Humanities. *Research Evaluation*, 16(2), 137–48.
- Gu, X., & Blackmore, K. (2017). Characterisation of academic journals in the digital age. Scientometrics, 110(3), 1333–1350.
- Haley, M. R. (2017). On the normalization and distributional adjustment of journal ranking metrics: A simple parametric approach. *Journal of the Association for Information Science and Technology*, 68, 1590–1593.
- Hammarfelt, B., & De Rijcke, S. (2015). Accountability in context: Effects of research evaluation systems on publication practices, disciplinary norms, and individual working routines in the Faculty of Arts at Uppsala University. *Research Evaluation*, 24(1), 63–77.
- Hicks, D. (2004). The four literatures of social science. In H. Moed (Ed.), *Handbook of quantitative science and technology research* (pp. 473–496). Kluwer Academic.
- Huang, D. W. (2016). Positive correlation between quality and quantity in academic journals. *Journal of Informetrics*, 10(2), 329–335.
- Ingwersen, P., & Larsen, B. (2014). Influence of a performance indicator on Danish research production and citation impact 2000–12. *Scientometrics*, 101(2), 1325–1344.
- Jacsó, P. (2010). Comparison of journal impact rankings in the Scimago Journal & Country Rank and the Journal Citation Reports databases. *Online Information Review*, 34(4), 642–657.
- Jaeger, P. T., Kettnich, K., Taylor, N. G., & Gorham, U. (2016). Award-winning scholarship and the importance of academic journals. Library Quarterly, 86(3), 247–247.
- Kulczycki, E., Engels, T., Pölönen, J., Bruun, K., Duskova, M., Guns, R., Nowotniak, R., Petr, M., Sivertsen, G., Starčič, A., & Zuccala, A. (2018). Publication patterns in the social sciences and humanities: Evidence from eight European countries. Scientometrics, 26, 3.
- Kulczycki, E., Guns, R., Pölönen, J., Engels, T., Rozkosz, E., Zuccala, A., Bruun, K., Eskola, O., Starčič, A. I., Petr, M., & Sivertsen, G. (2020). Multilingual publishing in the social sciences and humanities: A seven-country European Study. *Journal of the Association for Information Science and Technology*. https://doi.org/10.1002/asi.24336
- Late, E., Korkeamäki, L., Pölönen, J., & Syrjämäki, S. (2018). The role of learned societies in national scholarly publishing. *Learned Publishing*, 33(1), 5–13. https://doi.org/10.1002/leap.1270
- Leydesdorff, L., Wouters, P., & Bornmann, L. (2016). Professional and citizen bibliometrics: complementarities and ambivalences in the development and use of indicators—A state-of-the-art report. Scientometrics, 109(3), 2129–2150.
- Liu, M. J., Hu, X., Wang, Y. D., & Shi, D. B. (2018). Survive or perish: Investigating the life cycle of academic journals from 1950 to 2013 using survival analysis methods. *Journal of Informetrics*, 12(1), 344–364.



- Mahmood, K. (2017). Correlation between perception-based journal rankings and the journal impact factor (JIF): A systematic review and meta-analysis. Serials Review, 43, 120–129.
- Moed, H. (2004). Handbook of quantitative science and technology research. Kluwer Academic.
- Nederhof, A. J. (2006). Bibliometric monitoring of research performance in the social sciences and the humanities: A review. *Scientometrics*, 66, 81–100.
- Norris, M., Oppenheim, C., & Rowland, F. (2008). The citation advantage of open-access articles. *Journal of the American Society for Information Science and Technology*, 59(12), 1963–1972.
- Pölönen, J., Engels, T., & Guns, R. (2019). Ambiguity in identification of peer-reviewed publications in the Finnish and Flemish performance-based research funding systems. Science and Public Policy. https://doi.org/10.1093/scipol/scz041
- Pölönen, J., Guns, R., Kulczycki, E., Sivertsen, G., & Engels, T. E. (2020). National lists of scholarly publication channels: An overview and recommendations for their construction and maintenance. *Journal of Data and Information Science*. https://doi.org/10.2478/jdis-2021-0004
- Pölönen, J., Laakso, M., Guns, R., Kulczycki, E., & Sivertsen, G. (2020). Open access at the national level: A comprehensive analysis of publications by Finnish researchers. *Quantitative Science Studies*. https://doi.org/10.1162/qss_a_00084
- Rafols, I., & Leydesdorff, L. (2009). Content-based and algorithmic classifications of journals: Perspectives on the dynamics of scientific communication and indexer effects. *Journal of the American Society for Information Science and Technology*, 60(9), 1823–1835.
- Rost, K., Teichert, T., & Pilkington, A. (2017). Social network analytics for advanced bibliometrics: Referring to actor roles of management journals instead of journal rankings. *Scientometrics*, 112(3), 1631–1657.
- Sanz Casado, E, et al. (2020). Ranking de visibilidad e impacto de revistas científicas españolas de Humanidades y Ciencias Sociales con sello de calidad FECYT. Available at: https://www.fecyt.es/ es/publicacion/ranking-de-visibilidad-e-impacto-de-revistas-cientificas-espanolas-de-humanidades-y. Accessed 13 February 2010
- Sanz-Casado, E., De Filippo, D., & Alexandre-Benavent, R. (2017). Classification model of Spanish scientific journals in social sciences and humanities. In 22nd Nordic workshop on bibliometrics and research policy, Helsinski (Finland), November 9–10.
- Sasvári, P., Nemeslaki, A., & Duma, L. (2019). Exploring the influence of scientific journal ranking on publication performance in the Hungarian social sciences: The case of law and economics. *Scientometrics*, 119, 595. https://doi.org/10.1007/s11192-019-03081-4
- Sivertsen, G., et al. (2016). Publication-based funding: The Norwegian model. In M. Ochsner (Ed.), Research assessment in the humanities: Towards criteria and procedures (pp. 71–90). Springer International Publishing.
- Sivertsen, G. (2016b). Patterns of internationalization and criteria for research assessment in the social sciences and humanities. Scientometrics 107, 357–368 (2016). https://doi.org/10.1007/ s11192-016-1845-1
- Sivertsen, G. (2018). Balanced multilingualism in science. BiD: textos universitaris de biblioteconomia i documentació, 40.
- Torres-Salinas, D., Bordons, M., Giménez-Toledo, E., Delgado-López-Cózar, E., Jiménez-Contreras, E., & Sanz-Casado, E. (2010). Clasificación integrada de revistas científicas (CIRC): propuesta de categorización de las revistas en ciencias sociales y humanas. El Profesional de la Información, 19(6), 675–684.
- UNIT. (2020). Evaluering av ordningen Norske åpne tidsskrifter i humaniora og samfunnsvitenskap. Available at https://www.openaccess.no/rapport-evaluering-nahst.pdf.
- Vanclay, J. K. (2012). Impact factor: Outdated artefact or stepping-stone to journal certification? Scientometrics, 92(2), 211–238.
- Waltman, L., & Van Eck, N. J. (2012). A new methodology for constructing a publication-level classification system of science. *Journal of the American Society for Information Science and Technology*, 63(12), 2378–2392.
- Yu, D. J., Wang, W. R., Zhang, S., Zhang, W., & Liu, R. Y. (2017). A multiple-link, mutually reinforced journal-ranking model to measure the prestige of journals. *Scientometrics*, 111(1), 521–542.

