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Status of Editing and Publishing of Scholarly Journals by Academic Societies of Science and Technology in Korea

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ABSTRACT

Background: The present study analyzed publishing data of scholarly journals which were published in 2018 by academic societies of science and technology in Korea to observe journal editing and publishing status.
Methods: A total of 346 regional journals (59 natural science, 118 engineering, 44 agriculture, fisheries, and oceanography, and 125 medical and pharmacy) and 141 international journals (32 natural science, 43 engineering, 12 agriculture, fisheries, and oceanography, 54 medical and pharmacy) were included in this analysis, which applied the journal review by the Korea Federation of Science and Technology. Websites of the journals and the submitted publication data in 2019 were reviewed.
Results: Except for a few journals, all of the journals were published by academic societies. Basic information of journals was well displayed by both offline and online. Most of the 346 regional journals were published in Korean language or mixed with English but 77 (22.3%), mostly medical, were in English. One-third (n = 104) journals published less than 40 articles while 9 published over 200, and 261 journals (75.4%) received less than 100 submissions in 2018. Most (n = 298, 86.1%) of them were enlisted in the Korean Citation Index (KCI). Editorial board members performed manuscript editing in 171 (49.4%) journals, and most of the journals paid < 50,000,000 won for publishing costs. Of 141 international journals, 138 (97.9%) were published in English and all of them published overseas submissions. Forty-one (29.1%) journals accepted < 20% of submissions but 58 (41.1%) accepted 100%. Of them, 124 (87.9%) were indexed in the KCI, 93 (66.0%) in the Web of Science, 120 in Scopus, and 62 in PubMed. Editorial board members in 38 (27.0%) journals took responsibility of manuscript editing. Publishing cost of 79 (56.0%) journals was < 50,000,000 won. Only 157 (32.2%) of total 487 journals, mostly medical, documented gendered innovation in their instruction to authors.
Conclusion: Most of the Korean science and technology journals keep global standard of editing and publishing. Their offline and online visibility is acceptable but most regional journals are small and of low academic impact while international journals are globally indexed and acknowledged. Korean scholarly journals should invite more and better articles to keep quality publication.

Keywords: Scholarly Journal; Korean Academic Society; Science and Technology; Regional; International

INTRODUCTION

Publication of articles in scholarly journals is one of basic activities of scientific research. Therefore, most academic societies publish journals of their own scopes, which must be encouraged for science progress. In the journal database of the Korea Research Foundation, 5,630 journals are registered, but only 2,194 of them are Korea Citation Index (KCI) indexed and 324 index candidates.[1]

The Korean Federation of Science and Technology Societies (KOFST) is an organization to enforce academic activities of science and technology societies in Korea, which are categorized natural science, engineering, agriculture, fisheries & oceanography, medicine & pharmacy, and complexed sciences.[2] The KOFST plays many roles of supporting or boosting academism in science and technology categories by several programs. One of the KOFST programs is financial support for journal publication by academic societies, which is grouped for regional, international, and pre-international journals. The international journals are indexed ones in the Web of Science or Scopus and the regional journals are those not indexed by either of the 2 global databases.[2] The journal supporting program selects 70%–80% journals among the applicants after peer review and supports < 50% of publication cost with limitation of 40,000,000 won. A peer review system is established and announced through the website of KOFST. The journal review system is composed of 5 essential and 9–10 grading items which represent editing or publishing quality and scientific contribution.[3]

To overview journal publishing status and quality, the present study analyzed publishing and editing status of scholarly journals of science and technology in Korea.

METHODS

The data of journal editing and publishing in 2018 were submitted by journals to KOFST for peer review in 2019. The submitted data were used for the peer review to choose journals of financial support, and additionally the present analysis included additional basic information on their websites.

Ethics statement

The present study was not a subject of review by the Institutional Review Board because it did not include human subjects, materials, or data.

RESULTS

Number of journals published in Korea

Of the 5,630 registered journals in the Korea Research Foundation, 2,987 (53.1%) are published by academic societies.[1] **Table 1** presents number of the listed scholarly journals by the Korean Research Foundation. A total of 2,194 of the 5,630 registered journals are indexed in KCI with 324 candidates. Among them, 769 journals (30.6% of total 2,518 indexed or candidate journals) are in the scope of science and technology, 676 KCI and 93 candidates (**Table 1**). The KOFST received application of 487 (63.3%) journals for peer review in 2019, 346 regional and 141 international journals (**Table 2**).

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Table 1. Status of indexed journals in the KCI

Academic categories	KCI indexed	KCI index candidates	Total
Humanities & social science			
Humanities & literature	533	51	584
Social science	777	133	910
Arts & sports	117	24	141
Complexed	91	23	114
Subtotal	1,518	231	1,749
Science and technology			
Natural science	122	6	128
Engineering	228	27	255
Agriculture, fisheries & oceanography	73	8	81
Medicine & pharmacy	253	52	305
Subtotal	676	93	769
Total	2,194	324	2,518

Source: Korea Citation Index at https://www.kci.go.kr/kciportal/po/statistics/poStatisticsMain.kci?tab_code=Tab1.
KCI = Korea Citation Index.

Table 2. Number of journals analyzed in the study

Scientific categories	Regional journals	International journals[a]	Total
Natural science	59	32	91
Engineering	118	43	161
Agriculture, fisheries & oceanography	44	12	56
Medicine & pharmacy	125	54	179
Total	346	141	487

[a]International journals are those indexed by the Web of Science or Scopus.

Regional journals

Data of editing and publishing items of 346 regional journals are summarized in **Table 3**. Their numbers by journal categories are 59 natural science, 118 engineering, 44 agricultural & marine science, and 125 medicine & pharmacy. In the language of the text, 77 (22.3%)

Table 3. Publishing status of regional journals by Korean academic societies in 2018[a]

Items	Natural science (n = 59)	Engineering (n = 118)	Agriculture, fisheries & oceanography (n = 44)	Medicine (n = 125)	Total (n = 346)
Language					
Korean	20	59	19	30	128
English	11	10	3	53	77
Mixed	28	49	22	42	141
Issues/year					
1–2	0	1	0	9	10
3–4	27	27	24	90	168
5–6	28	60	15	20	123
7–10	1	6	3	1	11
11–12	3	24	2	5	34
No. of publications					
< 40	15	18	6	65	104
40–59	23	28	20	44	115
60–99	14	39	13	10	76
100–199	7	25	4	6	42
> 200	0	8	1	0	9
Submissions in 2018					
Unknown	7	12	1	12	32
< 40	19	26	7	63	115
40–59	12	22	17	29	80
60–99	15	25	13	13	66
100–199	7	21	4	5	37
200–299	0	5	2	1	8
> 300	0	7	0	1	8

(continued to the next page)

Table 3. (Continued) Publishing status of regional journals by Korean academic societies in 2018[a]

Items	Natural science (n = 59)	Engineering (n = 118)	Agriculture, fisheries & oceanography (n = 44)	Medicine (n = 125)	Total (n = 346)
Accept rate, %					
Unknown	7	12	1	13	33
< 20	0	3	0	1	4
20–49	1	4	1	3	9
50–79	4	7	9	10	30
80–99	6	9	6	10	31
100	41	83	27	88	239
No. of articles by foreign authors in 2018					
0	36	83	21	69	209
1–4	13	26	16	27	82
5–9	3	3	5	6	17
> 10	7	6	2	20	35
No. of reviewers in 2018					
Unknown	6	17	9	10	42
< 100	10	24	10	70	114
100–499	32	47	23	40	142
500–999	6	12	0	3	21
> 1,000	4	19	2	2	27
Platform for online publication					
None	0	3	0	1	4
Journal website	55	103	41	110	309
Publisher website	4	12	3	14	33
Online publishing form					
HTML	21	39	22	53	135
HTML + PDF	22	32	16	47	117
PDF	16	46	5	24	91
Unknown	0	2	1	1	4
Open Access					
Yes	31	57	21	88	197
No	28	61	23	37	149
Similarity Check					
Yes	42	85	32	88	247
No	17	33	12	37	99
DOI					
Yes	54	108	41	116	319
No	5	10	3	9	27
Manuscript edited by					
Journal staff	13	40	6	9	68
Outsourcing	10	6	4	37	57
Publisher service	6	15	4	19	44
Board member	29	54	29	59	171
Others	0	0	0	1	1
KCI					
Indexed	55	108	38	97	298
Candidate	2	4	2	9	17
Not indexed	2	6	4	19	31
Gendered innovation in the author instruction					
Yes	3	2	13	89	107
No	115	42	36	46	239
Copublishing					
Yes	1	3	1	16	21
No	58	115	43	109	325
Publishing cost, Korean won					
< 10 million	9	13	7	10	39
10–19.99 million	23	35	19	45	122
20–49.99 million	27	65	18	58	168
50–99.99 million	0	4	0	12	16
> 100 million	0	1	0	0	1

DOI = digital object identifier, KCI = Korean Citation Index, HTML = hyper-text mark-up language, PDF = portable document format.
[a]Some items are missing in some journals which makes different total numbers by items.

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were in English and the others were in Korean or mixed of Korean and English. Most of the journals of natural science, engineering, and agricultural & marine science published articles in Korean but 53 (42.4%) of 125 medical scope journals were published in English. About half (178 of 346) of the journals published 4 or less issues per year and 34 (9.8%) published 12 issues. Among the 118 engineering journals, 24 (20.3%) published 12 issues and 34 (28.8%) published over 100 articles. The numbers of publication issues were correlated with the number of publications in a year. Most of the journals received small number of submissions as 261 (83.1%) of 314 data-supplied journals received less than 100 per year. According to the small number of submissions, accept rate of the regional journals was rather high as 100% in 239 (76.4%) of 313 data-supplied journals.

Most of the journals published articles with digital object identifier (DOI) linkage and online, and only 4 did not publish online. Most of them had their own websites for online publication, and 135 journals published full texts by hyper-text mark-up language (HTML) file only while 117 by both of HTML and the portable document file (PDF) and 91 by PDF only. Of the 342 data-supplied journals, 197 (57.6%) are Open Access (OA), and 71.0% of medical journals were OA but it was about 50% in journals of other categories. Regional journals which documented gendered innovation in their instruction to authors were 13 (22.0%), 3 (2.5%), 2 (4.5%), and 89 (71.2%) in natural science, engineering, agricultural & marine science, and medicine, respectively. The editorial board members did manuscript editing after accept in half (n = 171) of the journals, and the remaining half did it by journal-hired manuscript editors (n = 68), outsourcing for professional service (n = 57), or printing publishers (n = 44). The annual budget for journal publishing is less than 50,000,000 won in most of the journals. The numbers of journals by categories and items are introduced in detail in **Table 3**.

International journals

The editing and publishing metrics of international journals are summarized in **Table 4**. Their numbers by journal categories are 32 natural science, 43 engineering, 12 agricultural & marine science, and 54 medicine. Almost all of the journals, 138 (97.9%) of 141, are published in English, and all of the journals in natural science and medicine are in English. Frequencies of the journals varied from 2 to 52 issues in the year 2018; 59 published 5–6 issues and 47 did 3–4 issues. The 11 journals of 43 in engineering published 12 issues. The numbers of total publications per journal were less than 100 in 89 (63.1%) journals, but one natural science and 3 engineering journals published over 500 articles. Annual submissions were less than 100 in 84 (59.6%) journals but 5 journals received submissions over 1,000. Forty-one (29.1%) journals accepted manuscripts < 20% while 58 (41.1%) accepted 100%. Almost all of the journals published articles authored by foreign researchers, which meant their role of international academic communication. Most of them, 124 indexed and 12 candidates, were KCI journals. For global indexing databases, 93 were included in the Web of Science, 120 in the Scopus, and 62 in PubMed. Most of them had eISSN and DOI link. Twenty-two were copublished by two or more academic societies. As a whole, 83 (58.9%) were OA journals, and 86 had own websites of online journals while 48 used publisher websites. Most of them were visible by HLML or by both HTML and PDF. Two of them were assessed of their journal impact factor (JIF) 2017 by the Web of Science over 5.0 but most of their JIF were < 2.0. None of them showed self-citation rate over 50% and 45 showed < 10%. International journals which had gendered innovation in their instruction to authors were 4 (12.5%), 4 (9.3%), 1 (8.3%), and 41 (75.9%) in natural science, engineering, agricultural & marine science, and medicine, respectively. The manuscript editing was done by journal-hired staffs in 25,

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Table 4. Publishing status of international journals by Korean academic societies in 2018[a]

Items	Natural science (n = 32)	Engineering (n = 43)	Agriculture, fisheries & oceanography (n = 12)	Medicine (n = 54)	Total (n = 141)
Language					
Korean	0	1	0	0	1
English	32	41	11	54	138
Mixed	0	1	1	0	2
Issues/year					
1–2	2	0	0	2	4
3–4	13	11	3	20	47
5–6	9	17	6	27	59
7–10	0	2	0	2	4
11–12	7	11	2	2	22
13–24	1	2	0	0	3
> 24	0	0	0	1	1
No. of publications in 2018					
< 40	8	4	2	7	21
40–99	14	18	5	31	68
100–199	5	10	2	15	32
200–499	4	8	3	1	16
> 500	1	3	0	0	4
Submissions in 2018					
< 40	8	13	1	16	38
40–99	15	13	2	16	46
100–199	5	4	3	12	24
200–499	3	7	4	4	18
500–999	1	5	0	3	9
> 1,000	0	1	2	2	5
Accept rate, %					
< 20	9	12	2	18	41
20–49	6	2	5	10	23
50–79	5	7	1	2	15
80–99	2	0	0	2	4
100	10	22	4	22	58
Proportion of foreign authors, %					
0–9	1	4	1	2	8
10–24	8	5	4	17	34
25–49	14	9	3	18	44
50–74	5	14	2	15	36
> 75	4	11	2	2	19
KCI					
Indexed	28	37	12	47	124
Candidate	2	5	0	5	12
Not indexed	2	1	0	2	5
Global database indexed					
Web of Science	27	35	7	24	93
ESCI	4	3	1	3	11
Scopus	30	40	12	38	120
PubMed	8	2	5	49	62
Engineering Index	0	7	0	0	7
Biosis	8	0	4	9	21
eISSN					
Yes	30	43	12	54	139
No	2	0	0	0	2
DOI					
Yes	30	41	12	51	134
No	2	2	0	3	7

(continued to the next page)

Table 4. (Continued) Publishing status of international journals by Korean academic societies in 2018[a]

Items	Natural science (n = 32)	Engineering (n = 43)	Agriculture, fisheries & oceanography (n = 12)	Medicine (n = 54)	Total (n = 141)
Gendered innovation in author instruction					
Yes	4	4	1	41	50
No	28	39	11	13	91
Copublishing					
Yes	3	4	1	14	22
No	29	39	11	40	119
Open Access					
Yes	18	11	6	48	83
No	14	32	6	6	58
Platforms for online publication					
Journal website	17	17	7	45	86
Publisher website	12	25	4	7	48
Others	3	1	1	2	7
Online publishing form					
HTML	6	12	3	15	36
HTML + PDF	16	16	6	34	72
PDF	9	15	1	5	30
Others	1	0	1	0	2
JIF 2017 by Web of Science					
Not included	8	11	4	19	42
< 1.0	10	9	3	5	27
1.0–1.9	9	17	5	14	45
2.0–2.9	2	4	0	8	14
3.0–3.9	2	2	0	5	9
4.0–4.9	0	0	0	2	2
> 5.0	0	0	0	2	2
Position in category					
Q1	2	5	3	4	14
Q2	6	6	3	7	22
Q3	6	9	2	11	28
Q4	11	10	0	7	28
Self-citation rate, %					
< 5	9	3	0	16	28
5–9.9	4	3	3	7	17
10–19.9	8	9	3	7	27
20–29.9	1	9	0	1	11
30–49.9	2	7	1	1	11
> 50	0	0	0	0	0
Manuscript edited by					
Journal staff	7	4	2	12	25
Outsourcing	9	8	0	20	37
Publisher	8	10	3	9	30
Board member	8	10	7	13	38
Publishing cost, Korean won					
< 10 million	1	2	0	1	4
10–19.99 million	7	6	3	1	17
20–49.99 million	15	19	6	18	58
50–99.99 million	9	14	2	28	53
100–200 million	0	2	1	5	8
> 200 million	0	0	0	1	1

DOI = digital object identifier, KCI = Korean Citation Index, HTML = hyper-text mark-up language, PDF = portable document format, JIF = journal impact factor.
[a]Some items are missing in some journals which makes different total numbers by items.

outsourcing in 37, publisher service in 30, and by board members in 38 journals. For total publishing cost in 2018, one journal amounted over 200,000,000 won, 8 paid 100,000,000–200,000,000 won, and 111 (78.7%) paid 20,000,000–100,000,000 won.

DISCUSSION

Most of Korean scholarly journals which applied the KOFST program are enlisted on the KCI as indexed or index candidates. A total of 2,518 journals are KCI enlisted by January 23, 2020, and 1,749 are in category of arts & humanities and social science while 769 are in science and technology (**Table 1**). There may be more journals unlisted by the Korea Science Foundation but it is hard to estimate exact numbers. In a word, numerous and diverse scholarly journals are published by Korean academic societies, which suggests active research and academic publication activities. However, most of them are rather small according to divided specialties, especially in the category of arts & humanities and social science. Publishing too many small journals is eventually linked to sustainability problems by insufficient submissions and financial shortage. We have to consider seriously how to co-publish journals of related scopes to keep their critical mass.

Only one-third of the KCI enlisted journals are in the scope of science and technology, total 769. Of the 769 journals, only 487 applied the review process by KOFST in 2019. Most of the remaining 282 journals may not meet the basic criteria of the application, such as timely publication, well-established peer review system, well-prepared instruction or guidelines for contributors, open display of basic publishing information, and global publication networking by DOI.[2] Of the 487 applied journals, 346 applied regional, and 141 international journal programs (**Table 2**). The numbers of journals were more in engineering and medicine than those in natural science, agriculture, and fisheries & oceanography, which suggest that numbers of academic societies and researchers are more in the engineering and medicine than those in other science fields.

Regional journals publish articles mainly in Korean, which means they target Korean audience. All of the articles in Korean were published in Korean text with English title, authors and affiliations, abstract, tables, figures, and references following global guidelines for non-English journals. Contrary to this, all of international journals published English articles except one. Only one is published in Korean but indexed by the global databases. Most of the regional journals were small and received insufficient submissions, and thus their accept rates were rather high. Many of 141 international journals were small either, but 26 of them published 12 or more issues and 20 published over 200 articles in 2018. Those journals received many submissions including overseas submissions and contributed much to global science.

Four regional journals had no platforms for online publication, which means they published offline (paper-print) only. However, all of other regional or international journals provided platforms at journal specific websites or at publisher's websites. Some of them were online only but most of them were both offline and online journals. A total of 197 (56.9%) regional journals were OA, but medical journals showed higher proportion (70.4%) while OA journals in 3 remaining category journals were around 50%. This pattern of OA was same in international journals, 83 (58.9%) of 141 journals were OA with 48 (88.9%) of 54 medical journals. In Korea, most of medical journals are OA but those in other categories are not. Medical journals publish more English articles with OA than those in other scopes, and this means that most of medical journals even regional journals intend to target global audience. All of the OA journals displayed CC-BY or CC-BY-NC (https://creativecommons.org/licenses/by/4.0/) following the Creative Commons' recommendation which is global norm of OA.

Being indexed in journal databases is critical for scholarly journals. Of the 346 regional journals, 31 were not, and 5 of 141 international journals were not indexed in the KCI, the

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national journal index in Korea. The present KCI index data suggest that most of the applying journals for KOFST review are indexed and officially endorsed for proper management of editing and publishing practice. The 141 international journals were indexed either by the Web of Science (93 journals) or Scopus (120 journals). The highest JIF in 2018 was 5.571 by the *Journal of Stroke*, which is published by the Korean Stroke Society. By the JIF, most of the journals were distributed between 1.0 and 2.0 and in the position at Q3 or Q4 among indexed journals in their scientific specialties by the Web of Science (**Table 4**). To raise the JIF and the position of journals in their categories, journals must be more reader friendly and invite more good quality articles with academic impacts. Many international journals have established stable system of editing and publishing to invite global authors and readers. They are upgraded slowly and steadily. One medical journal, *Journal of Korean Medical Science* (*JKMS*), which is published by the Korean Academy of Medical Sciences, is published weekly.[4] The journal publishes about 300 articles a year and is indexed by the KCI, Web of Science, Scopus, and PubMed. It plays the role of flagship journal for editing and publishing in Korea. In the ongoing period of coronavirus disease 2019 (COVID-19) pandemic, *JKMS* is publishing many articles on COVID-19 by rapid editing, mostly within one week from submission.

Manuscript editing (ME) is a final process of editing or revising of accepted manuscripts, which includes keeping formats, correcting typographic errors, grammars, or any required amendment before publication. This final ME is important for quality publication but it is a tedious technical process. It is ideal for journals to perform ME by well-trained professional manuscript editors, either as journal staff or via service company. In about half of the Korean scholarly journals, editorial board members are responsible for this ME process, but this is not a job of the editorial board members. The academic societies that publish scientific journals must exempt editorial board members doing ME. The board members should focus on contents of manuscripts by reviewing, selecting, and ensuring science. This is the priority for public financial supports to upgrade journals.

The SAGER guideline for gendered innovation was published in 2016 and has been recommended to all biomedical journals.[5] The guideline was accepted by the International Committee of Medical Journal Editors (ICMJE) and included in the ICMJE Recommendations.[6] The recommendation is to design the research to minimize gender or sex influence by subjecting equal number of humans, animals or cells of different sex or gender as possible. The articles should clearly document subject numbers by sex, which is responsible for all journals that publish research articles subjecting humans, animals, or cells. The present analysis confirmed that many Korean journals did not document the gendered innovation guideline and most of published articles did not describe it. A total of 107 (30.9%) of regional journals and 50 (35.5%) of 141 international journals documented this guideline in their instruction to authors. Most of them were medical journals, 89 (71.2%) of 125 regional and 41 (75.9%) of 54 international journals. Only 5% journals in natural science, engineering, and agriculture, fisheries & oceanography documented it. It is strongly recommended to accept it in editing and publishing for all journals which publish articles on humans, animals, or cells.

Summarizing the journal publishing, most of the Korean science and technology journals keep their global standard editing and publishing by both offline and online. Their online visibility is acceptable but most regional journals are small and of low academic impact while many international journals are globally indexed and acknowledged. Korean journals should invite more and better articles to keep quality publication. Research societies and the

government must stop more credit policy for publications in high impact factor journals to evaluate researchers.

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