RESEARCH ARTICLE

Inflated citations and metrics of journals discontinued from Scopus for publication concerns: the GhoS(t)copus Project [version 1; peer review: 1 approved]

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Abstract

**Background:** Scopus is a leading bibliometric database. It contains the largest number of articles cited in peer-reviewed publications. The journals included in Scopus are periodically re-evaluated to ensure they meet indexing criteria and some journals might be discontinued for publication concerns. These journals remain indexed and can be cited. Their metrics have yet to be studied. This study aimed to evaluate the main features and metrics of journals discontinued from Scopus for publication concerns, before and after their discontinuation, and to determine the extent of predatory journals among the discontinued journals.

**Methods:** We surveyed the list of discontinued journals from Scopus (July 2019). Data regarding metrics, citations and indexing were extracted from Scopus or other scientific databases, for the journals discontinued for publication concerns.

**Results:** A total of 317 journals were evaluated. Ninety-three percent of the journals (294/318) declared they published using an Open Access model. The subject areas with the greatest number of discontinued journals were Medicine (52/317; 16%), Agriculture and Biological Science (34/317; 11%), and Pharmacology, Toxicology and Pharmaceutics (31/317; 10%). The mean number of citations per year after discontinuation was significantly higher than before (median of difference 64 citations, p<0.0001), and so was the number of citations per document (median of difference 0.4 citations, p<0.0001). Twenty-two percent (72/317) were included in the Cabell's blacklist. The DOAJ currently included only 9 journals while 61
Cabell’s blacklist. The DOAJ currently included only 9 journals while 61 were previously included and discontinued, most for ‘suspected editorial misconduct by the publisher’.

**Conclusions:** The citation count of journals discontinued for publication concerns increases despite discontinuation and predatory behaviors seemed common. This paradoxical trend can inflate scholars’ metrics prompting artificial career advancements, bonus systems and promotion. Countermeasures should be taken urgently to ensure the reliability of Scopus metrics both at the journal- and author-level for the purpose of scientific assessment of scholarly publishing.

**Keywords**  
predatory, journal, Scopus, metrics, indexing, citation count

This article is included in the Science Policy  
Research gateway.

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Severin A: Data Curation, Writing – Original Draft Preparation, Writing – Review & Editing;  
Strinzel M: Data Curation, Writing – Original Draft Preparation, Writing – Review & Editing;  
Panzarella V: Data Curation, Writing – Review & Editing;  
Campisi G: Supervision, Writing – Review & Editing;  
Manno L: Supervision, Writing – Review & Editing;  
Gregoretti C: Supervision, Writing – Review & Editing;  
Einav S: Supervision, Writing – Review & Editing;  
Moher D: Supervision, Writing – Review & Editing;  
Giarratano A: Supervision, Writing – Review & Editing

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Introduction

Scopus is a leading bibliometric database launched in 2004 by the publishing and analytics company Elsevier. It was developed by research institutions, researchers and librarians, and contains the largest number of abstracts and articles cited in peer reviewed academic journal articles that cover scientific, technical, medical, and social science fields.

Scopus provides bibliometric indicators that many institutions use to rank journals to evaluate the track record of scholars who seek hiring or promotion. These metrics are also used to allocate financial bonuses or to evaluate funding applications. Ensuring the quality of the content of the Scopus database is, therefore, of great importance.

To be indexed in Scopus, journals are evaluated and periodically reviewed by an independent and international Content Selection and Advisory Board (CSAB), which is a group of scientists, researchers and librarians, comprised of 17 Subject Chairs, each representing a specific subject field, and by a computerized algorithm. At any time after a journal inclusion, concerns regarding its quality may be raised by a formal complaint, thereby flagging the journal for re-evaluation by the CSAB. Should the CSAB panel determine that the journal no longer meets Scopus standards, new articles from that journal are no longer be indexed. One of the most common reasons for discontinuation is ‘publication concerns’, which refers to the quality of editorial practices or other issues that have an impact on its suitability for continued coverage. The list of the discontinued sources is publicly available and is updated approximately every six months. However, publications from no longer indexed journals may not be removed retrospectively from Scopus. Hence, articles indexed prior to the date of discontinuation could remain part of the database.

It has been claimed that a number of journals discontinued from Scopus for publication concerns might be so-called ‘predatory’ journals. Predatory journals “prioritize self-interest at the expense of scholarship and are characterized by false or misleading information, deviation from best editorial and publication practices, a lack of transparency, and/or the use of aggressive and indiscriminate solicitation practices”. Since researchers are pressured to publish in indexed journals, predatory journals are constantly trying to be indexed in the Scopus database, thereby boosting their attractiveness to researchers. Having articles from predatory journals indexed in Scopus poses a threat to the credibility of science and might cause harm particularly in fields where practitioners rely on empirical evidence in the form of indexed journal articles.

We hypothesize that, even though Scopus coverage is halted for discontinued journals, still they can get citations, as all their documents already indexed remain available to users. To date, the metrics of those journals discontinued for publication concerns have not been studied yet. Therefore, by the present analysis we set out to (1) evaluate the main scientific features and citation metrics of journals discontinued from Scopus for publication concerns, before and after discontinuation, and (2) determine the extent of predatory journals included in the discontinued journals.

Methods

Search strategy

The freely accessible and regularly updated Elsevier list of journals discontinued from the Scopus database (version July 2019) was accessed on 24th January 2020 (See Underlying data). We restricted our analysis to journals discontinued for “publication concerns”. Journals were checked for relevant data (described below), then independently collected by eight of the authors in pairs (MI, GI, AM, LC, AS, MS, VP, AC) using a standardized data extraction form (Underlying data Table 1). A second check was performed by other four authors (LM, CG, SE, AG) to confirm the data and resolve discrepancies. Data collection was initiated on 24th January and completed by the end of February 2020. Confirmed data were registered on an Excel datasheet (Underlying data, Table 1).

Retrieved data and sources

Data were extracted either from the Scopus database or by searching other sources, such as ScImago Journal & Country Rank (SJR), Journal Citation Reports, Centre for Science and Technology Studies (CWTS) Journal Indicators, Beall’s updated List, Directory of Open Access Journals (DOAJ), PubMed and Web of Science. Open Access policy was checked on journals websites. A standardized data extraction form, independently applied by eight authors (MI, GI, AM, LC, AS, MS, VP, AC), was used to collect the following data: journal title, name and country of the publisher, the number of years of Scopus coverage, year of Scopus discontinuation, subject areas and sub-subject areas, Impact Factor (IF), CiteScore, ScImago Journal Rank (SJR), Source Normalized Impact per Paper (SNIP), best ScImago quartile, inclusion in PubMed, Web Of Science (WOS) and DOAJ (for open access journals) databases, presence in the updated Beall’s List, total number of published documents and total number of citations. All the metrics were checked on the year of Scopus discontinuation. In cases of discrepancies between Scopus data and other sources, the Scopus database was the preferential source.

We defined the ‘before discontinuation’ time frame as the period comprised within the first year of journal coverage by Scopus and the year of discontinuation, which was not included in our calculations. By ‘after discontinuation’ time frame, we referred to the period comprised within the year of Scopus discontinuation and the year of our data collection. In cases of multiple discontinuations, we considered the last one, according to the date of the last document displayed in the Scopus database. Citations ‘before’ and ‘after’ the date of discontinuation were manually counted based on either the Scopus journal overview or the downloadable tables made available by Scopus upon request (see Source data). When evaluating the journal inclusion in PubMed, WOS and DOAJ, year 2019 was considered as the reference year, preventing disadvantages for journals with time gaps for publication.
Finally, one author (AS) checked whether discontinued journals were present in Cabell’s whitelist or blacklist or the DOAJ’s list of discontinued journals. As some of the journals included in the blacklist lack ISSN or other unique identifiers, the comparison of the three lists with Scopus’s discontinued journals was based on matching the journals’ names by similarity using the Jaro-Winkler algorithm in RStudio Desktop 1.2.5033 and RecordLinkage 0.4–11.2 following the approach developed by Strinzel et al. (2019). The Jaro-Winkler metric, scaled between 0 (no similarity) and 1 (exact match), was calculated for all possible journals’ pairings. We manually inspected all pairs with a Jaro-Winkler metric smaller than one in order to include cases where, due to the orthographical differences between the lists, no exact match was found. For each matched pair, we compared the journals’ publishers and, where possible, ISSN, to exclude any cases where two journals had the same or a similar name but were edited by different publishers.

Full definitions and descriptions of the sources and metrics are reported in the Extended Data Appendix 1.

Statistical analysis
All data management and calculations were performed using Microsoft Excel (version 2013, Microsoft Corporation®, USA) and GraphPad Prism (version 8.3.1, 322, GraphPad software®, San Diego California). The normality of the distribution was assessed with the D’Agostino-Pearson test. Means and standard deviations (SDs) for variables with normal distribution or medians, interquartile ranges (IQRs, 25th–75th) and ranges (minimum value - maximum value) for non-normally distributed data were reported. Categorical data were expressed as proportions and percentages.

The paired sample t test or the Wilcoxon matched-pairs signed ranked test were used to compare journals’ data before and after Scopus discontinuation. The total number of documents per journal and the citations count prior to discontinuation of the journals was 8 years (IQR 6–10, range 1–54). In total, 299 journals had been assigned to a SCImago quartile (Q); 39 of them (13%) listed in Q1 or Q2, and 260 in Q3 or Q4 (87%). Only ten of the discontinued journals had an Impact Factor at the year of discontinuation, with a median value of 0.84 (IQR 0.37–2.29, range 0.28–4).

Table 1. Distribution of Scopus discontinued journals by publisher.

<table>
<thead>
<tr>
<th>Publishers (n=135)</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Journals Inc.</td>
<td>12.3 (39/317)</td>
</tr>
<tr>
<td>Asian Network for Scientific Information</td>
<td>6 (19/317)</td>
</tr>
<tr>
<td>OMICS Publishing Group</td>
<td>5.7 (18/317)</td>
</tr>
<tr>
<td>Medwell Journals</td>
<td>4.1 (13/317)</td>
</tr>
<tr>
<td>iMedPub</td>
<td>3.5 (11/317)</td>
</tr>
<tr>
<td>World Scientific and Engineering Academy and Society</td>
<td>2.8 (9/317)</td>
</tr>
<tr>
<td>Science Publications</td>
<td>2.5 (8/317)</td>
</tr>
<tr>
<td>Academy Publisher</td>
<td>2.2 (7/317)</td>
</tr>
<tr>
<td>Allied Academies</td>
<td>1.9 (6/317)</td>
</tr>
<tr>
<td>Canadian Center of Science and Education</td>
<td>1.9 (6/317)</td>
</tr>
<tr>
<td>International Digital Organization for Scientific Information (IDOSI)</td>
<td>1.9 (6/317)</td>
</tr>
<tr>
<td>Science and Engineering Research Support Society</td>
<td>1.6 (5/317)</td>
</tr>
<tr>
<td>Serials Publications (International Science Press)</td>
<td>1.6 (5/317)</td>
</tr>
<tr>
<td>AMSE Press</td>
<td>1.3 (4/317)</td>
</tr>
<tr>
<td>Eurojournals Inc</td>
<td>1.3 (4/317)</td>
</tr>
<tr>
<td>Hikari Ltd</td>
<td>1.3 (4/317)</td>
</tr>
<tr>
<td>Research India Publications</td>
<td>1.3 (4/317)</td>
</tr>
<tr>
<td>Others</td>
<td>47 (149/317)</td>
</tr>
</tbody>
</table>

Table 4 shows the characteristics and metrics of journals at the time of discontinuation. The median time of Scopus coverage prior to discontinuation of the journals was 8 years (IQR 6–10, range 1–54). In total, 299 journals had been assigned to a SCImago quartile (Q); 39 of them (13%) listed in Q1 or Q2, and 260 in Q3 or Q4 (87%). Only ten of the discontinued journals had an Impact Factor at the year of discontinuation, with a median value of 0.84 (IQR 0.37–2.29, range 0.28–4).

Citation metrics
Table 5 shows the total number of documents and citations, the total number of documents per journal and the citations count before and after Scopus discontinuation. The total number

Results
Data could be retrieved regarding 317 of the 348 journals listed as discontinued (91.1%).

Journals’ and publishers’ characteristics
Among the 135 publishers identified, the publishers with the largest number of discontinued journals were: Academic Journals Inc. (39/317; 12.3%), Asian Network for Scientific Information (19/317; 6.0%), and OMICS Publishing Group (18/317; 5.7%). Table 1 reports the distribution of Scopus discontinued journals by publisher. United States (76/317, 24%), India (63/317, 20%) and Pakistan (49/317, 15%) were the most common countries where publishers declared they were headquartered (Figure 1 and Table 2).

The subject areas with the greatest number of discontinued journals were Medicine (52/317; 16%), Agriculture and Biological Science (34/317; 11%), and Pharmacology, Toxicology and Pharmaceutics (31/317; 10%) Table 3 and Extended data Table 1 report the distribution of discontinued journals by subject area and sub-area in full. Of these journals, 93% (294/318) declared they published using an Open Access model.

Citation metrics
Table 5 shows the total number of documents and citations, the total number of documents per journal and the citations count before and after Scopus discontinuation. The total number
Paired t-tests revealed that the mean number of citations per year after discontinuation was significantly higher than before (median of difference 64 citations, \( p<0.0001 \)). Likewise, the number of citations per document proved significantly higher after discontinuation (median of difference 0.4 citations, \( p<0.0001 \)) (Table 2).

Indexing in Cabell’s lists, updated Beall’s list, DOAJ and scientific databases
Of the discontinued journal, 22% (72/317) were included in the Cabell’s blacklist, while 29 (9%) were currently under review for inclusion. Only five journals (2%) were in included in the Cabell’s whitelist. In 243 cases (243/317), either the journal’s publisher was included in the updated Beall’s list of predatory publishers or the journal was included in the corresponding list of standalone journals (76.6%). The DOAJ currently includes only 9 journals. In total, 61 journals were previously included and discontinued by DOAJ; in 36 cases the reason was ‘suspected editorial misconduct by the publisher’ while in 23 instances it was ‘journal not adhering to best practice’ and in one case ‘no open access or license info’.

Table 6 shows the indexing in PubMed, Web of Science, updated Beall’s list, Cabell’s white- and blacklist, and DOAJ (both included and discontinued).

Discussion
The present study was aimed at scrutinizing the main features of journals whose coverage was discontinued by Scopus due...
Table 3. Distribution of Scopus discontinued journals by subject areas.

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Percentage</th>
<th>(Number/Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>16.40%</td>
<td>(52/317)</td>
</tr>
<tr>
<td>Agricultural and Biological Sciences</td>
<td>10.70%</td>
<td>(34/317)</td>
</tr>
<tr>
<td>Pharmacology, Toxicology and Pharmaceutics</td>
<td>9.77%</td>
<td>(31/317)</td>
</tr>
<tr>
<td>Engineering</td>
<td>7.88%</td>
<td>(25/317)</td>
</tr>
<tr>
<td>Computer Science</td>
<td>7.88%</td>
<td>(25/317)</td>
</tr>
<tr>
<td>Biochemistry, Genetics and Molecular Biology</td>
<td>5.36%</td>
<td>(18/317)</td>
</tr>
<tr>
<td>Business, Management and Accounting</td>
<td>5.36%</td>
<td>(17/317)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>5.36%</td>
<td>(17/317)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>4.73%</td>
<td>(15/317)</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3.78%</td>
<td>(12/317)</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>3.50%</td>
<td>(11/317)</td>
</tr>
<tr>
<td>Economics, Econometrics and Finance</td>
<td>2.52%</td>
<td>(8/317)</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>2.21%</td>
<td>(7/317)</td>
</tr>
<tr>
<td>Immunology and Microbiology</td>
<td>2.21%</td>
<td>(7/317)</td>
</tr>
<tr>
<td>Materials Science</td>
<td>2.21%</td>
<td>(7/317)</td>
</tr>
<tr>
<td>Veterinary</td>
<td>2.21%</td>
<td>(7/317)</td>
</tr>
<tr>
<td>Earth and Planetary Sciences</td>
<td>1.58%</td>
<td>(5/317)</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1.26%</td>
<td>(4/317)</td>
</tr>
<tr>
<td>Energy</td>
<td>1.26%</td>
<td>(4/317)</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>0.94%</td>
<td>(3/317)</td>
</tr>
<tr>
<td>Physics and Astronomy</td>
<td>0.94%</td>
<td>(3/317)</td>
</tr>
<tr>
<td>Nursing</td>
<td>0.63%</td>
<td>(2/317)</td>
</tr>
<tr>
<td>Dentistry</td>
<td>0.32%</td>
<td>(1/317)</td>
</tr>
<tr>
<td>Health Professions</td>
<td>0.32%</td>
<td>(1/317)</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>0.32%</td>
<td>(1/317)</td>
</tr>
</tbody>
</table>

Data were retrieved from Scopus and are reported as percentages and fraction.

Table 4. Journals characteristics at the year of Scopus discontinuation.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Median [IQR]</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scopus coverage (yrs.)</td>
<td>8 [6-10]</td>
<td>(1-54)</td>
</tr>
<tr>
<td>Time from Scopus discontinuation (yrs.)</td>
<td>5 [4-6]</td>
<td>(2-12)</td>
</tr>
<tr>
<td>Impact Factor†</td>
<td>0.84 [0.37-2.29]</td>
<td>(0.28-4)</td>
</tr>
<tr>
<td>SjR‡</td>
<td>0.17 [0.13-0.23]</td>
<td>(0.1-1.41)</td>
</tr>
<tr>
<td>SNIP§</td>
<td>0.4 [0.23-0.65]</td>
<td>(0.4-5.6)</td>
</tr>
<tr>
<td>CiteScore°</td>
<td>0.32 [0.17-0.46]</td>
<td>(0-10.33)</td>
</tr>
</tbody>
</table>

Data are reported as medians, interquartile ranges [IQRs] and ranges (minimum value – maximum value) or as percentages and fractions.

† No missing data. The analyses were conducted on all the 317 Scopus discontinued journals.
‡ Data were available and calculated for 304 journals.
§ Data were available and calculated for 299 journals.
° Data were available and calculated for 82 journals.
Our main finding was that articles published in these journals before discontinuation, remain available to users and continue to receive a relevant number of citations after discontinuation, more than before. Moreover, a large number of the discontinued journals are likely to be predatory.

Although Scopus applies a rigorous control of content quality and warns users when a journal is discontinued in its source details, the average users tend not to access journal’s details but articles’ contents. By doing so, they remain unaware that the article they have accessed was issued by a journal discontinued for publication concerns. Therefore, articles issued by journals whose scientific reputation is currently deemed questionable, continue to be displayed and to get cited as contents from legitimate, up-to-standard journals. When quantifying how coverage discontinuation affected the likelihood of these journals to be cited, data indicate that their articles received significantly more citations after discontinuation than before.

Beyond the dangerous exposure of scholars, clinicians and even patients to potentially dubious or low quality contents, the considerable number of citations received after discontinuation by “ghost journals” can be a serious threat to scientific quality assessment by institutions and academia. In fact, these citations contribute to the calculation of the authors’ metrics by Scopus, including the Hirsch index (H-index)\(^2\), which is still among the main descriptors of productivity and scientific impact, based on career advancements are determined\(^3\).\(^4\).

The fact that “ghost journals” can help to move up in academia is a relevant issue, and has inspired the allegorical vignette depicted in Figure 2: ghost journals can inflate authors’ metrics lifting them unnaturally and effortlessly.

Of greatest concern is our finding that many of the discontinued journals display predatory behaviors in claiming to be

Table 5. Citations and documents before and after Scopus discontinuation.

<table>
<thead>
<tr>
<th></th>
<th>Before Scopus discontinuation</th>
<th>After Scopus discontinuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of documents</td>
<td>591968</td>
<td></td>
</tr>
<tr>
<td>Total number of citations</td>
<td>1191885</td>
<td></td>
</tr>
<tr>
<td>Documents per journal(^*)</td>
<td>429 [159.5–1244] (2–132482)</td>
<td></td>
</tr>
<tr>
<td>Citations (n)</td>
<td>584624</td>
<td>607621</td>
</tr>
<tr>
<td>Citations per journal(^*)</td>
<td>415 [120-1580] (0-67529)</td>
<td>713 [254-2056] (0-19468)</td>
</tr>
<tr>
<td>Citations per year(^*)</td>
<td>60.32 [17.98-168] (0-4828)</td>
<td>152.9 [49.43-408] (0-4571)</td>
</tr>
<tr>
<td>Citations per document(^*)</td>
<td>1 [0.39-2.15] (0-170.4)</td>
<td>1.66 [0.93-2.66] (0-80.70)</td>
</tr>
</tbody>
</table>

Data are reported as medians, interquartile ranges [IQRs] and ranges (minimum value – maximum value), if not otherwise specified.

\(^*\) No missing data. The analyses were conducted on all the 317 Scopus discontinued journals.

Table 6. Discontinued journals current Open Access policy and main databases indexing.

<table>
<thead>
<tr>
<th>Open Access journals (%, n)</th>
<th>92.7 (294/317)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed (%, n)</td>
<td>6.3 (20/317)</td>
</tr>
<tr>
<td>Web Of Science (%, n)</td>
<td>9.1 (29/317)</td>
</tr>
<tr>
<td>Beall’s List (%, n)</td>
<td>76.6 (243/317)</td>
</tr>
<tr>
<td>Cabell’s Blacklist (%, n)</td>
<td>22.7 (72/317)</td>
</tr>
<tr>
<td>Cabell’s Whitelist (%, n)</td>
<td>1.6 (5/317)</td>
</tr>
<tr>
<td>DOAJ included (%, n)</td>
<td>2.8 (9/317)</td>
</tr>
<tr>
<td>DOAJ discontinued (%, n)</td>
<td>19.2 (61/317)</td>
</tr>
</tbody>
</table>

Data are reported as percentages and fractions.

DOAJ: Directory of Open Access Journals
open access. Exploitation of the open-access publishing model has been shown to go hand in hand with deviation from best editorial and publication practices for self-interest. Such journals are not only associated with poor editorial quality, but are also deceptive and misleading by nature, i.e. they prioritize self-interest at the expense of scholars, and lack transparent and independent peer review. Young researchers from low-income and middle-income countries are probably most susceptible to the false promises and detrimental practices of predatory journals. However, “predatory scholars” also seem to exist, possibly sharing a common interest with deceptive journals and publishers and knowingly using them to achieve their own ends.

The policy underlying the decision to keep publications prior to discontinuation of indexing is clear. Some of these publications may actually fulfill publishing criteria (e.g. International Committee of Medical Journal Editors, Committee on Publication Ethics). It would be unfair to punish researchers for an eventual deterioration in journal performance; changes in the standards employed by the journal may change over time and the researchers may be unaware of quality issues. On the other hand, as the integrity of the editorial process cannot be vouched for, it is ethically untenable to keep such data available without clearer warnings.

We believe that Scopus should evaluate deleting the discontinued journals from the database contents or, at least, stop tracking their citations. In alternative, we propose that the CSAB could apply these measures case-by-case, after evaluating the severity of the potential misconducts. At the author-level, an alternative may be the provision of two metrics: one with and one without citations from publications in discontinued journals.

This analysis is not free of limitations. First, we included the year of discontinuation in the “after discontinuation” period, starting from January 1st. This decision may have led to some overestimation in the number of citations received after discontinuation. Second, we included only those journals discontinued...
from Scopus for “publication concerns” but were not able to retrieve details regarding the specific concern raised. Finally, we did not evaluate the impact of the citations received after discontinuation on author-level metrics.

**Conclusions**

The citation count of journals whose coverage in Scopus has been halted for publication concerns, increases despite discontinuation. This paradoxical trend can inflate scholars’ metrics prompting career advancements and promotions. Countermeasures should be taken to ensure the validity and reliability of Scopus metrics both at journals- and author-level for the purpose of scientific assessment of scholarly publishing. Creative thinking is required to resolve this issue without punishing authors who have inadvertently published good quality papers in a failing or predatory journal.

**Data availability**

**Source data**

Discontinued sources from Scopus are available from the following link: [https://www.elsevier.com/_data/assets/excel_doc/0005/877523/Discontinued-sources-from-Scopus.xlsx](https://www.elsevier.com/_data/assets/excel_doc/0005/877523/Discontinued-sources-from-Scopus.xlsx)

All the relevant data are freely retrievable from Scopus ‘journal overview’ or can be requested to Scopus through [https://www.scopus.com/sources](https://www.scopus.com/sources).

**Underlying data**

Figsshare: Underlying data Table 1.xlsx. [https://doi.org/10.6084/m9.figshare.12231083.v2](https://doi.org/10.6084/m9.figshare.12231083.v2)

This project contains the following underlying data:
- Underlying data Table 1.xlsx (Standardized data extraction form with data collected)

**Extended data**

Figsshare: Extended data Appendix 1. [https://doi.org/10.6084/m9.figshare.12231110.v2](https://doi.org/10.6084/m9.figshare.12231110.v2)

This project contains the following extended data:
- Extended data Appendix 1.docx (Definitions of sources and metrics used in the manuscript of the GhoS(t)copus Project)

Figsshare: Extended data Table 1. [https://doi.org/10.6084/m9.figshare.12233171.v2](https://doi.org/10.6084/m9.figshare.12233171.v2)

This project contains the following extended data:
- Extended data table.docx (Distribution of Scopus discontinued journals by subject sub-areas)

Data are available under the terms of the [Creative Commons Attribution 4.0 International license (CC-BY 4.0)](https://creativecommons.org/licenses/by/4.0/).

**Acknowledgments**

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**References**

16. Beall’s list of predatory journals and publishers. [accessed 28 February 2020].
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Open Peer Review

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This is a very relevant study in the growing scholarship around predatory publishing. It is one of the first studies that look at how predatory or at least questionable journals that have been delisted from citation database continue to have a presence in academia. More specifically, the paper asks the very important question why databases like Scopus (and others) continue to track the citations of journals that have been removed. This creates a distortion at many levels, including at the individual publication profile level.

I am happy to recommend indexing of this paper as it is (some minor grammatical editing is required).

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes
**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Bibliometrics; scholarly publishing; science policy; sociology of science

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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