

Development Status and Countermeasures of Gold OA and Diamond OA Journals in China: A Case Study of Journals Indexed in the DOAJ Database

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Date: 2024-01-31T00:00:00+00:00

Abstract

Objective: To analyze the characteristics of gold OA and diamond OA journals worldwide and in China indexed in the DOAJ database, providing references for the OA development of Chinese academic journals. **Methods:** Retrieve and analyze the characteristics of gold OA and diamond OA journals worldwide and in China indexed in the DOAJ database, including subject classification, language, CC licenses, peer review strategies, and publication status, with statistical processing of the characteristic data. Understand the OA publishing status of domestic journals and editors' perceptions of OA through questionnaire surveys, analyze the questionnaire results, and summarize OA development strategies. **Results:** Among the 20,015 OA journals indexed in the DOAJ database, English-language journals constitute the vast majority (16,111). Among them, 66.26% are diamond OA journals, primarily concentrated in the social sciences. The most commonly adopted CC license type is CC BY, followed by CC BY-NC-ND and CC BY-NC, with peer review types being relatively dispersed. The DOAJ database indexes only 318 Chinese journals, which differs from the global situation in the DOAJ database: English-language journals slightly outnumber Chinese-language journals, gold OA journals account for a higher proportion (65.41%), and they are primarily Science, Technology, and Medicine (STM) journals. The most frequently used CC license type is CC BY-NC-ND (72.32%), and single-blind and double-blind peer review are the main peer review methods. Questionnaire survey results show that currently many domestic journals are not very familiar with the DOAJ database, and Chinese OA journals indexed in the DOAJ database still represent a small proportion of OA journals in China. Bronze OA accounts for the highest proportion among domestic OA journals; journals selected for the "Excellence Action Plan for Chinese Science and Technology Journals" and newly established English-language journals mostly adopt

the diamond OA model. Conclusion: Currently, gold OA and diamond OA journals represent a relatively small proportion in China, with bronze OA being the main OA model for Chinese journals. Compared with gold OA and diamond OA models, bronze OA journals lack explicit OA statements and copyright agreements; clearly stipulating authors' copyright retention and transfer and third-party licensing usage, and strictly implementing CC licenses helps OA journals standardize the scope of rights and obligations of all parties, and gold OA and diamond OA models represent the development direction for Chinese OA journals. Drawing on the indexing evaluation criteria of the DOAJ database can facilitate the OA construction and development of STM journals in China.

Full Text

The Development Status and Countermeasures of Chinese Gold OA and Diamond OA Journals: A Case Study of Journals Indexed in the DOAJ Database

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Abstract

[Purpose] This study analyzes the characteristics of global and Chinese Gold OA and Diamond OA journals indexed in the DOAJ database to provide references for the development of OA in Chinese academic journals. **[Methods]** We retrieved and analyzed the subject classification, language, Creative Commons (CC) license, peer review strategy, publication status, and other characteristics of global and Chinese Gold OA and Diamond OA journals in DOAJ, with statistical processing of the data. A questionnaire survey was conducted to understand the OA publication status and editors' awareness of OA in domestic journals, and the results were analyzed to summarize OA development strategies. **[Findings]** Among the 20,015 OA journals indexed in DOAJ, English-language journals accounted for the vast majority (16,111 journals), with 66.26% being Diamond OA journals concentrated primarily in the social sciences. The most commonly adopted CC license type was CC BY, followed by CC BY-NC-ND and CC BY-NC, while peer review types were relatively dispersed. DOAJ indexed only 318 Chinese journals, which differed from global patterns: English-language journals slightly outnumbered Chinese ones, Gold OA journals accounted for a higher proportion (65.41%), and most were Scientific, Technical, and Medical (STM) journals. The most frequently used CC license was CC BY-NC-ND (72.32%), with single-blind and double-blind peer review as the main methods. Questionnaire results showed that many domestic journals are not well acquainted with DOAJ, and the proportion of Chinese OA journals indexed in

DOAJ remains small. Bronze OA accounts for the highest proportion among domestic OA journals, while journals selected for the “Excellent Action Plan for Chinese STM Journals” and newly established English journals mostly adopt the Diamond OA model. **[Conclusions]** Currently, Gold OA and Diamond OA journals constitute a small proportion in China, with Bronze OA being the predominant model. Compared with Gold OA and Diamond OA, Bronze OA journals lack clear OA declarations and copyright agreements. Explicit regulations on authors’ copyright retention and transfer, as well as third-party licensing, and strict implementation of CC agreements can help OA journals standardize the scope of rights and obligations for all parties. Gold OA and Diamond OA models represent the development direction for Chinese OA journals. Drawing on DOAJ’ s inclusion evaluation criteria can facilitate the OA construction and development of STM journals in China.

Keywords: DOAJ database; Open access; Gold OA; Diamond OA; Bronze OA; Predatory publishing

Open access (OA) is an initiative adopted by the international academic, publishing, and library communities to promote the free dissemination of scientific research achievements via the internet, aiming to facilitate scientific communication and enhance research efficiency. OA eliminates access barriers and holds significant importance for academic dissemination: it not only benefits readers but also substantially increases article citations and journal impact. Additionally, OA has transformed journal business models from traditional subscription-based to author-pays models.

Technological development has brought both opportunities and challenges to scientific journals. In November 2021, UNESCO’ s 41st General Conference adopted the *Recommendation on Open Science*, marking a new stage of global consensus on open science. OA constitutes an essential component of open science, which includes open literature access, open research data, and open peer review.

The Directory of Open Access Journals (DOAJ), established by Lund University, Sweden, in May 2003, indexes peer-reviewed OA journals without restrictions on discipline, region, or language, covering all fields of natural and social sciences and accurately reflecting the global OA journal landscape. DOAJ’ s selection criteria have become the unofficial gold standard for OA journal evaluation. OA categories include Gold OA, Diamond OA, Green OA, Bronze OA, and hybrid publishing, among others. Different OA types vary in the degree of openness and copyright agreements, with Gold OA and Diamond OA journals having explicit provisions regarding authors’ copyright retention and transfer and third-party licensing. The primary distinction between Gold OA and Diamond OA lies in whether journals charge Article Processing Charges (APCs). Currently, DOAJ only indexes fully OA journals (Gold OA and Diamond OA) and excludes hybrid publishing, delayed OA, Bronze OA, and subscription models with OA options.

Furthermore, DOAJ has explicit requirements regarding CC license adoption and peer review strategies.

Given the current status of OA development in Chinese scientific journals, this study uses DOAJ as a case to analyze the quantity and characteristics (including subject classification, language, CC license, peer review, and publication status) of global and Chinese Gold OA and Diamond OA journals, with statistical analysis of the data. By comparing Chinese journals with global OA journals in DOAJ, this study aims to identify similarities and differences between Chinese and international OA journal development, summarize OA publishing strategies and methods, and provide references for OA development in Chinese academic journals.

1. Methods

1.1 DOAJ Database Indexing Analysis

This study examined global and Chinese journals indexed in DOAJ as research subjects, grouping them by type to investigate the status and differences of global and Chinese Gold OA and Diamond OA journals. Statistical methods were used to analyze inter-group differences.

1.1.1 Grouping Criteria DOAJ-indexed journals were divided into two major categories: global and Chinese. Based on APC charges, they were classified as either Gold OA or Diamond OA journals. Subgroups were further established according to: (1) language; (2) subject classification; (3) CC license; (4) major publishers; and (5) peer review type.

1.1.2 Exclusion Criteria Since DOAJ classification options allow journals to belong to multiple categories simultaneously (e.g., Chinese journals with English abstracts may be listed as Chinese-English journals), we first counted Chinese journals and then excluded duplicate data from English journals. Regarding CC licenses, since CC BY-NC, CC BY-NC-ND, CC BY-SA, and CC BY-NC-SA all include the attribution principle (CC BY), journals with duplicate CC BY markings were excluded.

1.2 Retrieval Strategy

DOAJ offers categorical and keyword retrieval options. Categorical retrieval parameters include subject classification, language, CC license type, publisher, publication location, peer review type, indexing date, and APC charges.

Our retrieval strategy was: (1) Global OA publication data represented the total DOAJ-indexed data; Chinese publication data used “China” (including Taiwan Province of China) as the publication location; (2) Language was English AND/OR Chinese; (3) Journals were categorized by subject into Scientific, Technical, and Medical (STM) journals and humanities/social science journals;

(4) Other parameters included indexing year, OA type, and publisher. Boolean operators AND or OR were used.

Subject categories were defined as:

- (1) Medical: Selecting the “Medicine” option in DOAJ
- (2) Science & Technology: Science OR Agriculture OR Technology OR Military Science OR Naval Science
- (3) Humanities & Social Sciences: General works OR History* OR Geography anthropology, recreation OR Social science OR Fine arts OR Music OR Language and literature OR Law OR Bibliography. Library science. Information resources

1.3 Statistical Analysis

SPSS 22.0 software was used for comparative analysis of data across categories for Gold OA and Diamond OA journals. Pearson’s chi-square test or Fisher’s exact probability method was used for count data comparisons. $P < 0.05$ was considered statistically significant.

1.4 Survey on OA Implementation Status in Chinese Journals

Since DOAJ indexing represents one pathway for journals to demonstrate OA implementation, and the definitive marker of OA journals is whether full texts are publicly available and downloadable, this study used an online questionnaire to investigate editorial offices’ understanding and implementation of OA. Many Chinese OA journals are not yet indexed in DOAJ, and many non-OA journals lack understanding of OA, CC licenses, and DOAJ.

1.4.1 Questionnaire Design and Survey Subjects The questionnaire covered: (1) respondents’ discipline; (2) language; (3) understanding of OA; (4) whether the journal had implemented OA; (5) OA timing (immediate or delayed); (6) understanding of DOAJ; (7) peer review type; (8) awareness and implementation of CC licenses (and which type); (9) presence of an English mirror website; and (10) APC status.

Survey subjects were Chinese academic journal editorial offices, primarily STM journals.

1.4.2 Data Analysis Questionnaire results underwent statistical analysis. Additionally, indexed and non-indexed OA journals were compared to analyze OA implementation status and DOAJ indexing rates, with comparative analysis between Chinese and global DOAJ-indexed journals.

2. Results

2.1 Global OA Journals in DOAJ

2.1.1 Growth Trends As of September 30, 2023, DOAJ indexed 20,015 OA journals, of which 13,261 (66.26%) were Diamond OA journals not charging APCs, and 6,754 (33.74%) were Gold OA journals. Since 2007, the number of global OA journals indexed in DOAJ has shown an upward trend, entering a rapid development phase after 2014. Particularly from 2015 to 2022, DOAJ indexed over 1,000 Diamond OA journals annually. The annual distribution is shown in Figure 1 [Figure 1: see original paper].

2.1.2 Global Geographic Distribution As of September 30, 2023, Indonesia ranked first with 2,326 indexed OA journals, followed by the United Kingdom (2,108) and Brazil (1,649). Brazil led in Diamond OA journals (1,510), followed by Indonesia (1,326) and Spain (933). The United Kingdom topped Gold OA journals (1,637), followed by Indonesia (1,000) and Switzerland (775). OA journals are concentrated in Asia, Europe, and the Americas. However, this data also reflects that DOAJ's coverage remains limited, with many OA journals, particularly other OA types (hybrid and Bronze OA), not yet indexed. Moreover, the geographic distribution varies among total OA, Gold OA, and Diamond OA journals, as shown in Table 1.

2.1.3 Characteristics Analysis Among all DOAJ-indexed OA journals, English-language journals dominated (80.49%, 16,111/20,015), with statistically significant differences between language categories ($P < 0.05$). Non-English Diamond OA journals had a higher proportion (82.94%, 3,238/3,904). For Diamond OA journals specifically, the English proportion decreased to 75.58% (10,023/13,261), primarily due to the large number of Diamond OA journals in South American countries and the rising proportion of Spanish-language journals.

Regarding subject classification, STM journals significantly outnumbered humanities and social science journals among Gold OA journals ($P < 0.05$), while humanities and social science journals accounted for 85.08% of Diamond OA journals, indicating that DOAJ-indexed Diamond journals concentrate in these fields.

For CC licenses, CC BY (attribution) dominated, followed by CC BY-NC, CC BY-NC-ND, and CC BY-SA, with statistically significant differences ($P < 0.05$).

In terms of publishers, Elsevier (Netherlands), MDPI AG (Switzerland), and BMC (Germany, under Springer) ranked among the top OA journal publishers, primarily publishing Gold OA journals due to their profit-oriented nature and expensive APCs. However, these publishers also publish Diamond OA journals (e.g., Elsevier operates 55 Diamond OA titles). DOAJ-indexed Diamond OA journals are mostly operated by universities and academic societies, while

those from publishing groups are typically newly established. The Diamond OA model's lack of APCs helps attract submissions.

Statistically significant differences existed across subject, CC license, major publisher, and peer review categories among total OA, Gold OA, and Diamond OA journals ($P < 0.05$). Table 2 presents the main characteristics.

2.2 Chinese OA Journals in DOAJ

2.2.1 Trends in Chinese Journal Indexing As of September 30, 2023, DOAJ indexed 318 Chinese OA journals, including 110 Diamond OA journals (no APC) and 208 Gold OA journals (with APC). Figure 2 [Figure 2: see original paper] shows the annual numbers. Growth was insignificant from 2007-2014, accelerated from 2014-2018 (similar to global trends), and significantly outpaced global growth after 2018. However, Diamond OA journal growth remained slow after 2014.

2.2.2 Characteristics of Chinese Gold OA and Diamond OA Journals Chinese journals in DOAJ differed from global patterns. English-language journals accounted for 58.18% (185/318), significantly outnumbering Chinese-language journals ($P < 0.05$), though no significant difference existed between English and Chinese Gold OA journals ($P > 0.05$).

Regarding OA types, Chinese journals showed a significantly different pattern: Gold OA accounted for a higher proportion (65.41%, 208/318), primarily STM journals, while Diamond OA (34.59%, 110/318) was significantly lower than the global level (66.26%, 13,261/20,015). Notably, English-language journals dominated Diamond OA (76.36%, 84/110), mainly due to China's recent encouragement of new English journals that adopt Diamond OA to attract submissions, particularly journals under the "Excellent Action Plan for Chinese STM Journals."

In subject classification, STM journals significantly outnumbered humanities/social science journals for both Gold OA and Diamond OA ($P < 0.05$), with humanities/social science journals accounting for only 15.09% (48/318) versus 47.78% (9,564/20,015) globally. Among STM journals, Gold OA titles significantly exceeded Diamond OA titles.

CC license adoption differed significantly from global patterns. Chinese journals most frequently used the most restrictive CC BY-NC-ND license (72.32%, 230/318), compared to only 22.23% (1,502/6,754) globally, where CC BY dominated. This indicates Chinese OA journals tend toward more restrictive licenses.

Regarding publishers, KeAi Publishing Group was the largest OA journal publisher in China, operating 74 Gold OA and 34 Diamond OA journals. Consistent with international patterns, publishing groups' Diamond OA journals were mostly newly established, though publisher rankings differed significantly. Journal editorial offices also represented an important publishing model, operating

54 Gold OA and 33 Diamond OA journals. All inter-group differences were statistically significant ($P < 0.05$).

Peer review methods differed significantly between China and abroad. Chinese journals primarily used single-blind and double-blind peer review, distributed relatively evenly with no significant inter-group differences ($P > 0.05$). Table 3 presents the detailed characteristics.

2.3 Questionnaire Survey Results

Since DOAJ indexes relatively few Chinese journals, we designed a questionnaire to assess domestic journal editors' understanding of OA and DOAJ. Among 122 returned questionnaires, 81 journals (66.39%) had implemented OA strategies, and 6 planned to do so. Of the 81 OA journals, 24 were indexed in DOAJ, with 2 applications pending. Ninety-five respondents knew about DOAJ, while 27 (22.13%) were completely unaware, indicating a substantial proportion of journals lack DOAJ knowledge, though most non-indexed journals had implemented OA (66.39%). Table 4 presents detailed results.

Among the 81 OA journals implementing OA, 24 executed CC licenses (all DOAJ-indexed), including 15 using CC BY-NC-ND, 4 using CC BY, and 5 using CC BY-NC. Twenty-three journals understood CC licenses but had not implemented any. The survey revealed that Bronze OA journals without CC licenses constituted the vast majority.

Among the 81 OA journals, 51 charged APCs while 20 did not. Of the 24 DOAJ-indexed journals, 16 were Gold OA (charging APCs) and 8 were Diamond OA (no APC).

By discipline, medical journals (including biology) comprised 52.46% (64 journals), with 44 being OA, 14 indexed in DOAJ (3 using CC BY-NC, 11 using CC BY-NC-ND), 41 charging APCs, and 3 not charging. All biomedical journals used peer review (51 single-blind, 13 double-blind). Science and technology journals accounted for 45.90% (56 journals), with 34 being OA but only 9 indexed in DOAJ. Fifteen did not charge APCs, while 19 did. Regarding CC licenses, 4 used CC BY, 2 used CC BY-NC, and 4 used CC BY-NC-ND, indicating one CC-implementing journal was not DOAJ-indexed. For peer review, 6 journals had no peer review (5 used editorial board review, 1 had no review), while among 50 with peer review, 19 used single-blind and 31 used double-blind methods. Two social science journals were both OA without APCs, one indexed in DOAJ (using CC BY), both employing double-blind peer review.

The questionnaire revealed that Gold OA and Diamond OA journals represent a low proportion, with Bronze OA journals constituting the majority. Most Bronze OA journals charge APCs, similar to Gold OA, but differ primarily in lacking CC licenses and OA declarations. Regardless of OA model, all journals employed peer review strategies.

3. Discussion

3.1 Characteristics and Current Status of Chinese STM Journals

China has over 8,400 academic journals, but many OA journals remain unindexed in DOAJ. The *China Open Access Publishing Development Report (2022)*, based on 4,963 STM journals from the *China STM Journals Development Blue Book (2021)*, reported 1,810 Chinese OA STM journals (36.47%) as of May 17, 2022. Bronze OA journals were most numerous (1,459, 29.40%), while Gold OA and Diamond OA journals numbered only 227 (4.57%) and 23 (0.46%), respectively. Research indicates Chinese OA STM journals are predominantly Bronze OA, lacking clear copyright agreements. The *China STM Journals Development Blue Book (2022)* notes that Chinese STM journals have distinctive characteristics: editorial offices aim to benefit domestic scholars through open publishing while facing challenges in digital publishing technology and internet dissemination capacity. Consequently, Chinese journals, particularly Chinese-language STM journals, have developed unique solutions—operating self-run websites, practicing free full-text access, and relying on external platforms for paid full-text distribution, creating a parallel OA and subscription model. For Bronze OA journals, copyright scope is undefined, with insufficient descriptions of users' rights. Using CC BY-NC-ND as an example, Bronze OA journals lack provisions on whether others can use works commercially or create derivative works (adaptations, translations, annotations, compilations). Thus, Chinese STM OA development has unique features, but some journals inadequately disclose copyright agreements. DOAJ's copyright regulations and information transparency merit emulation.

3.2 CC License Types, Applicability, and Recommendations

CC licenses comprise four basic requirements: Attribution (BY), Non-Commercial (NC), No Derivatives (ND), and Share Alike (SA). The current CC 4.0 version includes seven license types: CC BY, CC BY-NC, CC BY-NC-ND, CC BY-NC-SA, CC BY-ND, CC BY-SA, and CC0. Chinese journals in DOAJ most frequently use CC BY-NC-ND (72.32%, 230/318), the most restrictive type after CC0, limiting commercial use and prohibiting authors or third parties from publishing derivative works (adaptations, translations, annotations, compilations). CC BY and CC BY-NC are the next most common, accounting for 17.61% and 8.49% of Chinese journals in DOAJ, respectively.

Academic journals strictly prohibit duplicate submission, and many do not accept rewritten or translated manuscripts. As increasing Chinese STM journals are indexed in international databases (full-text or abstract), journals publishing derivative works (especially translations) risk duplicate indexing when the original and derivative works appear in the same database. Therefore, we recommend Chinese OA journals adopt CC BY-NC-ND to restrict derivative works. For journals with preprint posting that publish papers online before formal issue release to expand dissemination and impact, we recommend CC BY-SA or CC

BY-NC-SA. Table 5 summarizes CC license types and applicability for Chinese journals in DOAJ.

3.3 Benefits of DOAJ Indexing for Journal Visibility

OA models facilitate academic dissemination and enhance journal visibility and international impact. Referencing DOAJ inclusion requirements can help journals formulate OA strategies. For fully OA journals, DOAJ application offers several advantages: (1) It aligns with open science development, promotes disciplinary advancement and rapid knowledge dissemination, and enhances journal impact; (2) As the world's largest OA database with numerous indexed journals and users, DOAJ indexing increases citation frequency domestically and internationally, improving visibility for indexed journals and papers and raising awareness of authors, journals, and institutions; (3) The application process helps journals improve systems (including OA declarations, OA policies, peer review, editorial, ethics, and misconduct policies) and build international journal websites with transparent information; (4) Adopting and implementing CC licenses clarifies copyright regulations and clearly displays users' rights and obligations.

DOAJ indexing helps OA journals standardize systems and define OA scope. Even without joining DOAJ, journals can use DOAJ as a reference to develop OA strategies suited to their characteristics.

3.4 Developing OA Strategies Suited to Journal Characteristics

Most Chinese journals operate as editorial offices under supervisory units' management, with many being profit-oriented. Therefore, OA model selection should align with journal characteristics. DOAJ only indexes fully OA journals (Gold OA and Diamond OA), excluding partial OA or delayed OA journals. Currently, Bronze OA accounts for the highest proportion among Chinese OA journals, while Gold OA, Diamond OA, and hybrid publishing represent smaller shares. Although Bronze OA journals offer free article downloads, they lack clear copyright agreements. As copyright agreements gradually become clearer, Bronze OA numbers will likely decline. We recommend domestic journals explicitly define copyright details (especially users' usage boundaries) and clearly display implemented CC licenses to standardize rights and obligations among journals, authors, and readers.

Gold OA and Diamond OA are the two major publishing types indexed by DOAJ, differing primarily in APC charges. APCs generally cover online manuscript processing systems, peer review, language editing, figure production, editing, typesetting, proofreading, preprint posting, post-publication promotion, and long-term archiving. Chinese journals typically refer to APCs as page charges or publication fees. Some Chinese journals have adopted Diamond OA, mainly including "Excellent Action Plan" journals, newly established English journals, and journals receiving sufficient host institution support. Most are

co-published by Chinese institutions and international publishers. Diamond OA helps attract submissions and enhance impact. Gold OA APCs should be reasonable; excessively high fees may deter authors and risk developing into predatory journals. Research indicates Chinese Chinese-language and Chinese-English OA journals still follow traditional page charge models with generally low fees, while some English OA journals have established preliminary APC rules but lack complete, transparent pricing systems. We recommend developing a charging framework suitable for Chinese OA journals, strengthening website information construction, and improving transparency.

In Gold OA and Diamond OA models, compilation copyrights and information network transmission rights are transferred to editorial offices (or publishers) upon publication, while authors retain certain rights (moral rights including attribution and integrity). Both models enable immediate free reading, enhancing article readership, dissemination, and citation counts.

In summary, Chinese STM OA publishing has distinctive features, and editorial offices should develop OA strategies tailored to their specific circumstances.

3.5 Improving Systems and Transparency According to Journal Characteristics

- (1) **Implement appropriate CC licenses** to clarify rights and obligations among publishers, authors, and users. Journals should explicitly define authors' retained rights (attribution, integrity) and specify transferred rights (compilation copyrights, information network transmission rights) in copyright transfer agreements. China's predominant Bronze OA journals mainly suffer from unclear copyright licensing agreements. Although articles are freely accessible, users lack clear copyright provisions. Implementing appropriate CC licenses or explicit copyright statements would substantially benefit Chinese OA journals.
- (2) **Strictly implement peer review systems** as a crucial open science component. OA is an essential part of open science, which includes open data, open peer review, and open academic achievements. Rigorous peer review enhances academic quality and promotes open science development. Moreover, strict, transparent peer review is a hallmark of OA journals. In December 2013, DOAJ first launched the Principles of Transparency and Best Practice in Scholarly Publishing to help distinguish journal quality. Journal websites should display basic information: journal introduction, aims & scope, sponsor, publisher, editorial board, CC license, copyright information, peer review strategy, APC details (including waiver policies), etc.
- (3) **Strictly implement OA strategies** to prevent predatory publishing. While no clear definition of predatory journals exists, predatory publishing typically features: (1) excessively short review periods, absence of peer review, or questionable review quality; (2) extremely high APCs; and (3)

mega-journals with massive publication volumes. Editorial offices should address these issues. DOAJ's indexing evaluation emphasizes information transparency, rigorous peer review systems, and requires APC standards to be published. DOAJ's strict review process enables researchers to identify safe OA journals. Information transparency is crucial for eliminating predatory publishing, and predatory journal warning systems provide safeguards for OA development. Applying to DOAJ or referencing its criteria helps improve OA journal construction.

According to UNESCO, open science aims to make scientific knowledge in multiple languages openly and reusably accessible to all, enhancing scientific collaboration and information sharing for societal benefit, and opening scientific knowledge creation, evaluation, and communication to stakeholders beyond traditional scientific communities. Open science encompasses public display of published scientific content, encouraging open data and sources, and open peer review content, helping eliminate predatory publishing. Currently, DOAJ requires journals to display peer review strategy information and implement it strictly; future requirements may include opening specific peer review content.

3.6 Transition Between OA Models and Traditional Subscription Models

Many Chinese academic journals have transitioned from traditional subscription to OA models, significantly impacting operations. While OA enhances impact, journals must ensure sustainable operations. Subscription model changes affect revenue, but STM journals' short citation half-lives make rapid dissemination crucial. Full-text paid databases cause some potential subscribers to search directly in databases, losing potential subscribers.

Subscription revenue typically represents a small proportion of total income. For most Gold OA journals, APCs are the primary revenue source. For journals mainly funded by host institutions or newly established English journals not yet indexed in SCIE, Diamond OA can attract submissions; after achieving stable indexing and quality submissions, they may transition to Gold OA for profitability. Additionally, Bronze OA journals can transform into Gold OA or Diamond OA by clarifying copyright agreements. DOAJ's inclusion requirements for Gold OA and Diamond OA journals provide valuable references. Chinese STM journals face opportunities and challenges; establishing a Chinese-characteristic OA model that follows international OA publishing norms, accommodates Chinese journal circumstances, and complies with China's Copyright Law represents our development direction.

Currently, increasing journals adopt OA publishing instead of traditional subscription models. Chinese OA journals are characterized by Bronze OA dominance, with Gold OA and Diamond OA representing smaller proportions. Bronze OA journals lack clear OA declarations and copyright agreements compared to Gold OA and Diamond OA models, making the latter two the

development direction for Chinese OA journals. Drawing on DOAJ's inclusion evaluation system can facilitate OA construction and development, while implementing CC licenses helps standardize rights and obligations. OA models benefit academic dissemination and enhance journal visibility. As an essential open science component, OA journals should adopt specific OA models suited to their characteristics to adapt to open science development.

References

- [1] XU Wenjuan. Rethinking open access of Chinese academic journals[J]. *Acta Editologica*, 2019, 31(5): 523-526, 530.
- [2] DING Yi. Statistical analysis of Chinese open access journals and their charging policies indexed in DOAJ[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2023, 34(10): 1356-1363.
- [3] DOAJ. [EB/OL]. [2023-04-01]. <https://www.doaj.org>.
- [4] WANG Linhui, NI Ming. Strategies for Chinese open access journals applying for inclusion in DOAJ[J]. *Publishing and Printing*, 2022(5).
- [5] DOAJ. Application progress [EB/OL]. [2023-01-30]. <https://doaj.org/apply/>.
- [6] Creative Commons. Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) [EB/OL]. [2023-01-29]. <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.zh>.
- [7] DING Zuoqi, LI Chuwei. Current status and prospects of OA publishing in China based on journals selected for the “Excellent Action Plan for Chinese STM Journals” [J]. *Chinese Journal of Scientific and Technical Periodicals*, 2022, 33(11): 1561-1568.
- [8] SUN Shujun, YANG Jie, LI Xiang, REN Shengli. Analysis of OA journal publishing landscape based on JCR and its implications[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2023, 34(6): 766-774.
- [9] HUANG Yingjuan. Analysis of open access paper development trends in Chinese and American chemistry journals[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2022, 33(9).
- [10] YAN Jinghua, ZHENG Yanning, MAO Yilei. Research on the status of open access in domestic academic journals[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2021, 32(1): 28-35.
- [11] CNKI. Introduction to China Academic Journals (Online Edition) [EB/OL]. <https://kns.cnki.net/kns8s/?classid=YSTT4HG0>.
- [12] China Association for Science and Technology, STM Publishers Association. *China Open Access Publishing Development Report (2022)*[M]. Beijing: Science Press, 2023.
- [13] China Association for Science and Technology. *China STM Journals Development Blue Book (2021)*[M]. Beijing: Science Press, 2021.
- [14] China Association for Science and Technology. *China STM Journals Development Blue Book (2022)*[M]. Beijing: Science Press, 2023.
- [15] GUO Yumei, GUO Xiaoliang, ZHANG Lu, JI Haitao. Strategies for promoting differentiated open access in academic journals[J]. *Chinese Journal of Scientific and Technical Periodicals*, 2023, 34(6): 759-765.

- [16] WANG Linhui. Analysis of Chinese medical journals indexed in DOAJ and journal website construction[M]. Editorial Forum, 2022: 516-521.
- [17] DOAJ. Transparency & best practice[EB/OL]. [2023-05-10]. <https://doaj.org/apply/transparency/>.
- [18] WANG Linhui, LI Guangtao, NI Ming. Strategies and analysis for Chinese biomedical journals applying for international database indexing—A case study of China Oncology[J]. Chinese Journal of Scientific and Technical Periodicals, 2023, 34(12): 1636-1644.
- [19] LIU Pingping. Study on citation advantage of open access papers in hybrid journals—A case study of biomedical engineering journals[J]. Chinese Journal of Scientific and Technical Periodicals, 2023, 34(3): 383-391.
- [20] BIAN Xiaolin, DONG Hairong, WU Yuefeng, LIU Jinpeng, ZHAO Hongming. Discussion on collaborative development models between scientific journals and preprint platforms[J]. Chinese Journal of Scientific and Technical Periodicals, 2023, 34(7): 834-840.
- [21] Publicity Department of the CPC Central Committee, Ministry of Education, Ministry of Science and Technology. Notice on Issuing the “Opinions on Promoting the Prosperous Development of Academic Journals” [EB/OL]. [2023-08-18]. <https://journals.xmu.edu.cn/download/xggf/guanyutuidongxueshuqikanfanrongfazhandeyijian.pdf>.
- [22] NING Bi. Hot discussion and cool reflection on predatory journals[J]. Science-Technology & Publication, 2022, 41(7): 63-67.
- [23] UNESCO. Recommendation on Open Science-UNESCO Digital Library[EB/OL]. [2023-04-10]. <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>.
- [24] Editorial. Opening up peer review[J]. Nature, 560(7720): 527.
- [25] LU Cainü, GU Liping. Open science and responses of scientific journals[J]. Chinese Journal of Scientific and Technical Periodicals, 2022, 33(2): 183-191.
- [26] HUANG Jinxia, RUI Xiao, WANG Fang. Monitoring of global OA journals and APCs in 2022 and China’ s response[J]. Chinese Journal of Scientific and Technical Periodicals, 2023, 34(6): 685-691.

Author Contributions: Author 1: Database retrieval, data analysis, material compilation, and manuscript writing. Author 2: Database retrieval, data analysis, manuscript revision, and proofreading.

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv –Machine translation. Verify with original.