Accelerating Open Access Publishing of Scientific Journals to Foster Innovation in Publishing: Post-Print

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Abstract

Open access publishing has become a major trend in academic publishing. This paper, based on clarifying the significance of open access publishing, compares the current development status of open access publishing domestically and internationally, and proposes several recommendations to address the deficiencies in the development of open access publishing in China. It is hoped that by strengthening practitioners' awareness of openness and sharing, exploring sustainable business models, and focusing on enhancing journals' academic impact, the open access publishing process can be effectively advanced.

Full Text

Abstract

Open publishing has become a major trend in academic publishing. The Fifth Plenary Session of the 18th CPC Central Committee proposed the development concepts of "innovation, coordination, green development, openness, and sharing," establishing them as important directions for China's development during the 13th Five-Year Plan period. Research by Mccabe and Snyder also found that transitioning from subscription-based to open access journals can increase article citation rates by an average of 8%, with benefits concentrated primarily in top-tier journals. Based on clarifying the significance of open publishing, this paper compares the development status of open publishing domestically and internationally, and proposes several recommendations addressing the deficiencies in China's open publishing development. It is hoped that by strengthening the open sharing awareness among practitioners, exploring sustainable business models, and focusing on enhancing journals' academic influence, the open publishing process can be effectively advanced.

Keywords: scientific journals; open publishing; innovation; sharing

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2. Development History and Current Status of Open Publishing at Home and Abroad

2.1 International Situation

Since 2010, the three major giants in scientific publishing—Nature, Science, and Cell—have successively joined the open publishing wave. The Nature Publishing Group has launched three open access journals: Nature Communications (2010), Scientific Reports (2011), and Scientific Data (2014). Cell Press launched Cell Reports in 2012, and the Science publisher introduced the online open access journal Science Advanced in 2015. Moreover, a batch of open access journals with high academic quality and growing influence have continuously emerged. For example, the U.S. PLoS series of open access journals has achieved an impact factor as high as 13.5, and the total number of open access journals indexed by SCI has exceeded 1,000 [5]. Overseas research institutions and personnel have significantly increased their awareness and acceptance of open access journals.

2.2 Domestic Situation

Taking journals under the China Association for Science and Technology as an example, in 2007, among the 898 journals under the association, there were 140 open access journals (15.6%); in 2011, among the 1,050 journals, there were 308 open access journals, accounting for 29.3%. The top three disciplines were industrial technology (82 journals), medicine/health (68 journals), and mathematics/physics/chemistry (47 journals), comprising 64.0% of the total [6]. The total number of open access journals in China is insufficient, and high-impact core journals have yet to emerge, with low recognition by mainstream research institutions and professional evaluation bodies. Few traditional excellent journals have transitioned to open access publishing, with the vast majority of journals adopting a delayed free access model for full-text release, which still represents a significant gap from true open access publishing.

3. Strategies and Countermeasures for Accelerating Open Publishing

3.1 Strengthening Awareness and Unifying Perspectives

Constructing an open publishing system is an innovative form with important scientific value, conforming to the requirements of scientific research exchange and development in the new era. It is of great significance for promoting the

dissemination of China's scientific research achievements and enhancing international competitiveness, and represents fundamental work and an effective pathway for building an innovative country [7]. Journal publishing authorities and related practitioners must deeply recognize this point, strengthen the spirit of openness and sharing, and implement the clarification of relationships, integration of resources, innovation of mechanisms, and coordinated development into specific work processes. This work should be considered as part of the national press and publication system reform, with overall planning and coordinated layout.

3.2 Exploring Sustainable Business Models

According to research reports on open access publishing and models compiled in the Open Access Directory (OAD), international open access journals currently adopt several main business models [8]: (1) the article processing charge model, where open journal publishers sustain operations by charging authors article processing fees; (2) the hybrid model, where publishers charge both article processing fees for open access papers and subscription fees for journals, effectively a dual-charging system; and (3) the institutional/funding body support model, a popular international model for supporting open access. However, relying on sponsorship for journal operations is not an optimal long-term solution, as sustainability is relatively weak. To achieve long-term, in-depth development, open access publishing must ultimately rely on its own services to generate revenue. Balancing authors' affordability with publishers' operational benefits to achieve equilibrium between the two is an effective method for accelerating open access publishing.

Currently, major international publishing institutions generally provide open access options for authors. When publishing papers, authors can choose whether to publish via open access; if yes, they pay relatively high publication fees to support subsequent free access. If they choose no, the publication fee is lower, but readers must pay for subsequent access. Many authors, based on considerations of strengthening scientific research dissemination and exchange, or having received ample research funding, are willing to choose open access; otherwise, they can publish in traditional form. This open access option accommodates different authors' actual needs and publishers' operational requirements, making it very user-friendly and worthy of active trial and continuous improvement by domestic traditional journal publishers. Among the four major international publishers, the Springer Group offers open access options for over 1,500 traditional journals; Elsevier Group for over 1,600 journals; Wiley Group for over 1,300 journals; and Taylor & Francis Group for over 1,900 journals [7]. Well-known domestic traditional scientific journals have not yet been seen to provide this option.

3.3 Increasing Policy Support

In recent years, national investment in scientific and technological endeavors has continuously increased, research conditions have been increasingly optimized, and outstanding scientific achievements have been continuously emerging. However, related papers have shown a gradual trend of outflow, weakening the significance of domestic journals as the main body for reporting scientific achievements and as dissemination platforms. Building high-quality journals and enhancing their international influence is imperative. Therefore, it is recommended that the state provide financial and policy support to distinctive and qualified journals, especially English-language journals, for key cultivation (such as the "International Influence Enhancement Plan for Chinese Scientific Journals," "Quality Scientific Journals Project of China Association for Science and Technology," and "Peak Action Plan" currently being implemented by the China Association for Science and Technology), with full funding for their open access publication fees to effectively promote barrier-free circulation of academic achievements and enhance the international competitiveness of Chinese journals.

Additionally, some studies suggest that at the current stage, attempts can be made to achieve public welfare transformation of the four major databases—Wanfang Medical Network, CNKI, VIP Information, and Longyuan Journal Network—through government operational subsidies. This would guide them to provide public welfare knowledge services to the general public while ensuring their revenue [8]. Simultaneously, government education departments, professional title evaluation committees, and other institutions can introduce corresponding supporting measures to assist universities and other research institutions in transforming their professional title evaluation and career rating mechanisms, improving recognition of excellent open access journals, supporting the dissemination of research achievements in open access journals from a policy level, eliminating researchers' concerns about submitting to open access journals, and creating conditions for open access journals to attract high-quality manuscripts.

3.4 Focusing on Enhancing Academic Influence

At all times, manuscript quality is the core competitiveness of scientific journals. To better play the platform role of scientific information transmission and enhance international visibility, open access journals must establish a strict quality control system, raise inclusion thresholds, and improve timeliness. Taking the globally authoritative open access journal directory system—DOAJ—as an example, it explicitly stipulates that papers published in included journals must undergo peer review or editorial review, while examining bibliometric indicators such as citation counts to ensure the academic quality of included journals. Whether newly established open access journals or transitioning ones, both must strictly adhere to the red lines of acceptance standards and manuscript quality, preventing quality decline caused by massive expansion. Meanwhile, they should strengthen the timeliness of paper publication, improving the cur-

rently widespread phenomenon of delayed open access publishing, and achieve real-time publishing as soon as possible. In today's environment of rapid information updates, only journals with short publication cycles and strong timeliness can more easily attract readers to read and cite, and more easily attract outstanding authors to actively submit manuscripts.

Domestic open access journals should adopt an international perspective, actively join international indexing systems, and utilize international platforms to attract and integrate international resources. For example, the rapidly developing open access journal Plos One in recent years has been included in more than ten indexing systems such as PubMed, MEDLINE, Scopus, Web of Science, Google Scholar, and EMBASE [10]. Through authoritative international indexing systems, global readers can quickly and conveniently read journal information, increasing international visibility while also attracting more scholars and experts to join the journal's author team and even editorial team.

Furthermore, open access journals should explore evaluation systems suitable for their own characteristics. Built upon digital publishing and network dissemination, open access journals not only possess the important function of publishing papers like traditional journals but also provide precise knowledge push services, open review and commentary functions, and integration with social media. These service methods and characteristics cannot be evaluated by traditional bibliometric indicators such as impact factor, total citation frequency, and immediacy index, and to some extent can serve as important assessment indicators for journal positioning and service capabilities. Therefore, it is necessary to explore a series of new evaluation indicators and mechanisms to promote journal evaluation and development under the new situation, such as transparency of peer review processes, paper reprint volume, journal openness degree, as well as the digital level of open access journal websites and construction of diversified service capabilities.

3.5 Comprehensively Strengthening Technical Support Capacity

Open access journals are built upon network infrastructure. The applicability and user-friendliness of journal websites, the richness of content, and the convenience of search functions directly affect users' experience and even utilization rates of open access journals. Internationally mature open access journal websites are generally well-developed and can meet users' various requirements. For example, the PLOS ONE website not only has powerful information publishing functions but also provides full-text links or sources for every reference, as well as push services for social media such as Twitter, LinkedIn, and Facebook. However, Weng Chunguang et al. [12] conducted a comparative analysis of the usability levels of domestic and international biomedical open access journal websites and found that domestic open access journal websites have on average 25% more accessibility errors than foreign ones, and link speeds are slower than foreign websites. This indicates that domestic open access journal website construction is not yet standardized, requiring more human and material resources

for development and maintenance, or outsourcing to professional teams for management, timely content updates, webpage maintenance, and ensuring normal functioning of various features. Moreover, with the arrival of the media convergence era, the number of mobile terminal accesses is continuously growing. Service models such as open access journal APP construction and WeChat official account construction urgently need rapid development to meet constantly changing user needs.

In conclusion, open access publishing has developed rapidly in recent years and has become a major trend in academic publishing. Countries worldwide attach great importance to it and have introduced a series of policies and measures to promote open access publishing development. In recent years, China has also achieved some development in open access publishing, with the emergence of national-level large-scale knowledge repositories (such as Sciencepaper Online) and a small number of high-quality open access journals. However, the overall development level remains suboptimal, with insufficient open sharing awareness among practitioners, authors, and readers, and failure to find development models suitable for China's national conditions. Building an open access publishing system with Chinese characteristics, catching up in subsequent development, turning challenges into opportunities, and fully leveraging the spirit of innovation and sharing will effectively advance the publishing industry to new heights and contribute to the development of China's cultural soft power.

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