A User Perspective on the International Digital Publishing Platform of the China Science and Technology Journal Excellence Action Plan: Current Status and Optimization Recommendations

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Abstract

目的 From the user perspective, analyze the development status of the three platforms (production, operation, and dissemination) selected for the "China Science and Technology Journals Excellence Action Plan—International Digital Publishing Service Platform" project and propose optimization recommendations.

方法 Through investigation and comparative analysis, elaborate on the advantages and disadvantages of the production, operation, and dissemination platforms, and propose optimization suggestions and recommendations for sustainable platform development.

结果 The operation platform (Tengyun Editorial System), production platform (Founder Cloud Platform), and dissemination platform (SciOpen) of the selected project have implemented functions such as online submission and peer review, digital production, and international dissemination, yet optimization is still required. From a user perspective, the Tengyun Editorial System needs to expand foreign journal resources in its academic misconduct detection database, augment information on peer reviewers from a global scope, and enhance system usability; the Founder Cloud Platform needs to provide technical support services for typesetting and incorporate online interactive features; the SciOpen platform needs to expand support for journal types, among other improvements.

结论 The construction of the International Digital Publishing Platform under the China Science and Technology Journals Excellence Action Plan has achieved preliminary results, and should aim to establish a knowledge-service publishing platform that integrates the entire workflow of acquisition, editing, peer review, proofreading, and distribution, characterized by internationalization, intelligence, and digitization.

Full Text

Current Status and Optimization of the International Digital Publishing Platform for the Excellence Action Plan for China STM Journals: A User Perspective

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Abstract:
[Purpose] From the user perspective, this study analyzes the construction status of three platforms—production, operation, and dissemination—selected for the "Excellence Action Plan for China STM Journals: International Digital Publishing Service Platform" project and proposes optimization suggestions. [Methods] Through investigation and comparative analysis, we elaborate on the advantages and disadvantages of the production, operation, and dissemination platforms and propose optimization and sustainable development recommendations. [Results] The selected operation platform (Tengyun Editorial System), production platform (Fangzheng Cloud Platform), and dissemination platform (SciOpen) have achieved basic functions including online submission and peer review, digital production, and international dissemination, yet optimization is still needed. From the user perspective, the Tengyun Editorial System needs to expand its foreign journal resources in the academic misconduct detection database, increase reviewer information from a global pool, and improve system usability. The Fangzheng Cloud Platform needs to provide technical support services for typesetting and add online interactive functions. The SciOpen platform needs to expand its supported journal types. [Conclusions] The Excellence Action Plan for China STM Journals has achieved initial success in building an international digital publishing service platform. Future efforts should aim to establish an international, intelligent, and digital knowledge service publishing platform that integrates the entire workflow from acquisition, editing, and review to proofreading and dissemination.

Keywords: digital publishing platform; internationalization; Excellence Action Plan for China STM Journals; user perspective

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According to the latest statistics from the *Blue Book of China STM Journals Development (2023)*, by the end of 2022, China had a total of 5,163 scientific journals, including 4,556 Chinese-language journals, 434 English-language journals, and 173 bilingual journals. Chinese-language journals constitute the vast majority, with English-language journals accounting for only about 8.4% of the total. However, Chinese scholars prefer to publish their high-quality research in SCI-indexed English journals to gain international recognition. In 2022, Chinese authors published 740,776 SCI papers, representing 32.42% of the global total (2,284,623 papers) and ranking first worldwide. Nevertheless, the num-

ber of SCI papers published by Chinese authors is approximately 20 times that published in Chinese SCI journals, indicating that the vast majority of Chinese SCI papers are published in foreign journals. Moreover, due to the lack of a mature international digital publishing service platform in China, over 80% of the country' s 200+ SCI journals rely on "borrowing boats to go overseas" —that is, cooperating with overseas platforms for dissemination. Therefore, building an international digital publishing service platform with independent intellectual property rights is essential to ensure the dissemination and utilization of China' s scientific and technological innovation achievements, safeguard national scientific literature data copyrights, promote journal cluster development, reduce expensive platform cooperation and publishing fees, facilitate the international dissemination of Chinese-language journals, and support the growth and global expansion of Chinese STM journals.

In recent years, as China' s digital R&D technology and professional teams have matured, several international digital publishing platforms developed by societies and publishers have been launched, including Science Press' s SciEngine, Chinese Laser Press's Researching, Higher Education Press's Frontiers Journals, and the Chinese Medical Association' s Mednexus. SciEngine integrates peer review, XML-based structured production management, and online publishing. Researching focuses on optics, physics, and geography journals, featuring article fragmentation, one-click publishing, and simultaneous knowledge mining and application. Mednexus is an English medical journal publishing and dissemination platform co-developed by the Chinese Medical Association and Wiley' s technology company Atypon. However, these platforms are still in their early development stages, hosting between 40 and 440 Chinese and English journals, most of which are not exclusively cooperating, thus failing to achieve economies of scale. Compared with mature international digital publishing platforms, they exhibit significant gaps, including weak international influence, incomplete service functions, insufficient talent reserves, and a lack of high-quality sustainable development models.

To promote the construction of China' s international digital publishing service platform, in September 2019, the China Association for Science and Technology, Ministry of Finance, Ministry of Education, Ministry of Science and Technology, National Press and Publication Administration, Chinese Academy of Sciences, and Chinese Academy of Engineering jointly launched the "Excellence Action Plan for China STM Journals" (hereinafter referred to as the "Excellence Action Plan"). For the first time, the plan established the "International Digital Publishing Service Platform" project, divided into three components: operation, production, and dissemination. The operation platform serves authors, reviewers, and editors through an online submission and peer review system, with CNKI responsible for developing the Tengyun Editorial System. The production platform handles digital production of accepted manuscripts, including editing, typesetting, generating XML/HTML formats, and issue compilation, with Beijing Founder Electronics Co., Ltd. responsible for developing the Fangzheng Academic Publishing Cloud Service Platform (hereinafter "Fangzheng Cloud

Platform"). The dissemination platform utilizes network and mobile technologies to deliver academic content and knowledge services to target users, with Tsinghua University Press responsible for developing SciOpen.

Literature review reveals few reports analyzing the construction status of these three platforms from a user perspective or examining how they form an integrated full-process platform and achieve sustainable development. You Di et al. analyzed these three platforms from a full-process perspective, but their analysis of each platform' s construction status, advantages, and disadvantages lacked depth. Therefore, this study invites researchers to trial the platforms and compares them with similar products from a user perspective to analyze the construction status and shortcomings of the Tengyun Editorial System, Fangzheng Cloud Platform, and SciOpen, and to propose optimization and sustainable development recommendations.

1 Research Methods and Subjects

This study primarily employs investigation and comparative analysis methods. First, we invited 25 university and research institution faculty and students with extensive paper submission experience to trial the English version of the Tengyun Editorial System configured for the English journal *Journal of Materiomics*, submitting a total of 65 manuscripts. We also invited 10 young researchers with high academic standing who had experience using multiple submission systems to conduct peer reviews, while the authors processed manuscripts as editors. Feedback forms were created to collect user experiences with the English test version of the Tengyun Editorial System and to identify its advantages and disadvantages compared with mainstream international submission systems such as Editorial Manager and ScholarOne. Additionally, we invited 20 faculty and students who had used the Chinese version of the Tengyun Editorial System configured for *Journal of the Chinese Ceramic Society* to provide feedback on its interface aesthetics, functionality, and performance compared with similar products.

Next, 50 manuscripts accepted through the English version of the Tengyun Editorial System were processed through the Fangzheng Cloud Platform for digital production. Finally, we invited 10 faculty and students to browse the SciOpen platform and submit their user experiences and compare its advantages and disadvantages with the websites of four major international publishers (Elsevier, Wiley, Springer, and Taylor & Francis). The authors also tested the journal backend management functions using trial accounts for SciOpen' s operation management system and omnimedia publishing system.

2 Tengyun Editorial System

2.1 Current Status of the English Version of Tengyun Editorial System

The English version of the Tengyun Editorial System serves English-language journals. Compared with mature international submission systems, the Tengyun Editorial System offers the advantage of simple operation, with specific details provided in Appendix Table 1 . However, it has the following disadvantages (detailed in Appendix Table 2):

First, usability needs improvement. For example, the reviewer recommendation page should have separate fields for first and last names. Before authors submit their manuscripts, the system should integrate the manuscript and its attachments into a PDF for author proofreading. The system also suffers from mixed Chinese-English language issues and unreasonable color schemes—for instance, on the reviewer submission page, the submit, save, and close buttons are all gray, which may mislead users into thinking they are not clickable.

Second, performance requires enhancement. For example, transmission interruptions frequently occur when uploading large files. When copying and editing text from external documents in the review comments field, editing is not smooth. Additionally, when the system automatically extracts information from uploaded documents, it sometimes inaccurately identifies titles, keywords, and abstracts.

2.2 Optimization Suggestions for the English Version of Tengyun Editorial System

From the perspective of international application, the English version of the Tengyun Editorial System requires optimization in several key areas.

First, expand the academic misconduct detection database resources. Academic misconduct detection services, which check for plagiarism, duplicate submission, and improper authorship, serve as a gatekeeper before initial review. The system works by comparing uploaded papers with its database of published articles and calculating similarity using search and comparison algorithms. Therefore, integrating authoritative, high-quality, full-text databases is crucial for enhancing the system' s pre-review function—the richer the database resources, the more effective the detection results. However, the Tengyun Editorial System' s academic misconduct detection database is based on CNKI' s database, which includes most Chinese journals but lacks English-language journal data, particularly foreign English journals, resulting in inaccurate detection results for the English version.

Currently, mainstream international submission systems such as ScholarOne and Editorial Manager use the CrossCheck academic misconduct detection system. CrossCheck, launched by CrossRef, has incorporated databases from numerous renowned international publishing groups including Elsevier, Springer,

Wiley-Blackwell, BMJ, AAAS, and APS, as well as mainstream preprint servers like arXiv, providing relatively accurate duplication rates. However, integrating CrossCheck into the Tengyun Editorial System would significantly increase costs and raise risks of original content leakage. Therefore, how domestic platforms can obtain full-text copyrights of global English STM journals remains a challenge requiring collaborative efforts from government, enterprises, and users.

Second, increase global reviewer information. Editorial Manager' s reviewer database is based on Scopus, providing global access to expert names, emails, research fields, publication records, and author influence metrics, greatly facilitating editor reviewer selection. ScholarOne, based on the Web of Science database, also provides global expert information. In contrast, the Tengyun Editorial System' s English version has fewer foreign experts in its reviewer database and needs further expansion with comprehensive expert information.

2.3 Current Status of the Chinese Version of Tengyun Editorial System

While the English version of the Tengyun Editorial System is still in testing with many functions not yet available, its workflow and features are based on the Chinese version, with the primary difference being the system language. To comprehensively understand the system' s construction, we investigated the Chinese version and compared it with similar systems such as Magtech' s JournalX 3.0 Editorial System (hereinafter "JournalX Editorial System") and Renhe Huizhi' s SoWise Editorial System (hereinafter "SoWise Editorial System").

Our investigation and comparative analysis reveal that the Chinese version of the Tengyun Editorial System can basically meet the submission and peer review needs of Chinese-language journals. With Excellence Action Plan support, the system has added intelligent review reports, publication dissemination evaluation analysis, and research trend analysis functions. It can also separately display the duplication ratio from authors' dissertations during academic misconduct detection. However, these new functions are currently only available for trial use by some journals.

The current general version of the Tengyun Editorial System has the following advantages: (1) Simplified submission process. Authors can choose between one-step and guided submission modes. Guided submission breaks down the process into steps with a left-side panel showing completion status, allowing authors to submit more systematically. One-step submission enables completing all information on a single page. Additionally, after uploading manuscripts, the system automatically extracts titles, abstracts, and keywords, and automatically fills in author information, phone numbers, and addresses based on registered user data, greatly simplifying the submission process. (2) Intelligent reviewer recommendation. The system offers two recommendation dimensions: automatically selecting search keywords based on article content to recommend experts based

on recent academic achievements, or recommending based on experts' review history. The former recommends experts based on their recent publicly published articles indexed by CNKI, while the latter recommends based on experts' completed reviews for the journal. (3) Visualized expert information. Based on CNKI' s vast database, the system provides experts' publication records, paper keywords, and research achievements, as well as their review and submission history to help editors select reviewers accurately. (4) Mobile client availability. In addition to the desktop version, the Tengyun system offers a mobile client, enabling authors, editors, and reviewers to read literature and process manuscripts anytime, anywhere.

From the perspectives of authors, reviewers, and editors, the Tengyun Editorial System has the following disadvantages compared with other domestic submission systems in terms of interface aesthetics, functionality, and performance (issues already mentioned for the English version are not repeated here; see Appendix Table 3 for details): (1) Poor usability. For example, the system frequently lags and pages often freeze. When an account has multiple roles, tasks for all roles cannot be displayed on the same interface, requiring role switching that may lead to omissions. (2) Mobile functionality needs improvement. For instance, the mobile version' s single manuscript detail page does not display reviewer invitation and deadline information or whether reviewers have agreed to review, making it difficult for editors to track review progress and potentially extending review cycles. (3) Lack of personalized interface design. The submission system entry interface is uniform across journals, differing only in the displayed journal cover.

2.4 Optimization Suggestions for the Chinese Version of Tengyun Editorial System

Based on comparison with similar products, we propose the following optimization suggestions for the Chinese version of the Tengyun Editorial System:

First, add cross-journal business supporting multi-journal collaboration and data integration. Currently, the Tengyun Editorial System operates in a single-journal mode, similar to a standalone version. Given the trend toward journal cluster development, submission systems should evolve to support not only individual journal workflows but also multi-journal collaboration and data integration. For example, JournalX and SoWise editorial systems establish unified reviewer and author databases for journal clusters, enabling shared resources and manuscript transfer functions, greatly expanding peer review scope.

Second, add WeChat service functions. Connecting submission systems with social software improves communication efficiency between editors and authors and provides more diverse and convenient services. WeChat is a social software used by most Chinese people. After binding the submission system with a journal' s WeChat service account and completing real-name authentication, users can query and manage submission and review processes without logging

into the submission system. Editors and authors can send and receive messages, including revision reminders and citations, with conversation records preserved for query and traceability. Currently, JournalX, SoWise, and Elsevier's WeChat service accounts all provide manuscript progress query functions.

Third, add complete version and process records. In the Tengyun Editorial System, editors must click "Details" for each stage to view reviewer comments, and must click "More" in corresponding option boxes to view or download author revisions and response letters, then download relevant files based on the review timeline. We suggest adopting SoWise' s approach of providing complete version and process records, displaying all versions and processing records for each manuscript at each stage to enable one-step understanding of all review information and accurate downloading of stage-specific manuscripts and attachments.

Fourth, enhance statistical analysis functions. To run academic journals effectively, editorial board members must be fully utilized. The submission system should identify editorial board members and enable one-time queries of all board members' submission and review counts and specific articles within designated time periods, helping editorial offices understand board members' contributions, select outstanding members, and motivate less active ones.

Fifth, customize and humanize page design. The system could learn from JournalX by customizing interfaces and functions to meet the needs of journals with different operating models and from different countries and regions. After logging in, users' to-do tasks for all roles should be displayed intuitively and prominently, with each task accessible via hyperlinks to corresponding pages.

Sixth, automatically generate blind review manuscripts. Double-blind peer review improves review fairness. The Tengyun Editorial System currently requires editors to manually upload blind manuscripts, increasing workload and error rates. JournalX automatically generates blind manuscripts, avoiding problems caused by manual uploading.

3 Fangzheng Cloud Platform

3.1 Current Status of Fangzheng Cloud Platform

As a digital production platform, the Fangzheng Cloud Platform converts accepted manuscripts into multiple data formats for digital dissemination. With Excellence Action Plan support, the platform has improved automatic typesetting capabilities, standardized XML data quality inspection workflows, provided more value-added services, and enhanced system efficiency and user experience. From the user perspective, the platform offers the following advantages: (1) AI-powered intelligent proofreading improves editing efficiency. The intelligent proofreading software integrates into the Word toolbar for easy use. Based on natural language recognition and machine learning technologies, it provides academic literature standardization checking capabilities, including checks for

error-prone words, sensitive terms, non-standard names, article logic, contextual repetition, figure/table/equation numbering, thousand-separator formatting, punctuation, symbols, and unit spacing, effectively improving editing efficiency and content quality. (2) Rapid single-article publishing. Following international trends, the platform enables production and dissemination based on individual articles. After typesetting and data format generation, accepted single manuscripts can be immediately published through the dissemination platform. (3) Multiple data formats and multi-channel publishing. After typesetting, manuscripts generate PDF, H5, full-text XML, Word, and other formats to meet diverse scenarios including traditional printing, online publishing, and mobile reading. With Excellence Action Plan support, the platform has added WeChat data formats, allowing editorial offices to publish articles on WeChat official accounts through simple copy-pasting. (4) Fast and convenient issue compilation. On the Fangzheng Cloud Platform, refined single manuscripts can be submitted for issue compilation by setting issue periods, article sections and order, and starting page numbers, enabling rapid complete issue compilation. (5) Structured manuscript storage and resource center establishment. Typeset manuscripts are stored in structured form with automatic data parsing to extract authors, keywords, institutions, funding information, figures, tables, and other resources into independent databases. The platform supports data indexing and processing for multi-dimensional automatic reorganization, enabling rapid creation of proprietary image libraries, article topic databases, and various knowledge bases. This helps journal publishers transition from resource services to knowledge services and enhances journal dissemination and influence in the increasingly internet-based academic publishing context. (6) WeChat notification and query functions. Production progress and proofreading notifications can be automatically pushed to authors via journal WeChat service accounts, and authors can view real-time mobile XML/HTML full-text displays of current manuscript versions.

Compared with similar products, the Fangzheng Cloud Platform has the following disadvantages: (1) Publishing units require typesetting technical personnel. While the platform' s automatic typesetting is fast (approximately one minute), manuscripts must meet certain format standards beforehand. Automatically typeset manuscripts only roughly conform to journal publishing styles, and refinement requires downloading the Fangzheng Feixiang refinement tool. Adjustments to image size, position, and detailed formatting still require professional typesetting technicians, increasing human resource costs for publishing units. (2) Single manuscript upload method. Currently, uploading manuscripts requires opening the folder containing the manuscript in a pop-up window and selecting the file. To improve speed and convenience, we suggest adding drag-and-drop upload functionality.

3.2 Optimization Suggestions for Fangzheng Cloud Platform

Based on comparison with similar products, we propose the following optimization suggestions for the Fangzheng Cloud Platform:

First, provide manual technical support services for typesetting. Given the platform' s automatic typesetting technology, we suggest Fangzheng provide manual services for editorial offices lacking typesetting technical personnel. Similar products such as Renhe XML Online Typesetting and Proofreading System (hereinafter "Renhe Proofreading System") adopt a human-plus-machine approach, using the XML online system for full-process online processing that supports online typesetting by technicians and online editing and annotation by editors and authors. Additionally, according to China' s academic paper writing rules, image modifications during typesetting require professional technicians.

Second, add online interactive functions. Chinese journals must implement a three-proofreading system and require extensive communication with authors during proofreading. Renhe Proofreading System imposes no limit on proofreading rounds and provides online interactive functions, enabling editors to communicate with authors via email or WeChat within the system to verify article details or propose revisions. WeChat communication within the system provides faster and more effective communication with Chinese or Chinese-speaking authors, which is particularly important since most papers in domestic English journals are by Chinese authors or from China-foreign collaborations. In contrast, Elsevier' s Proof Center provides only one round of proofreading each for editors and authors, with communication conducted via external email.

Third, add online production process monitoring and management functions. Automatic statistics of processing cycles for each stage with automatic reminders before deadlines would facilitate process monitoring and help editors manage production cycles.

4 SciOpen

4.1 Current Status of SciOpen

SciOpen is an international digital publishing platform for STM journals independently developed by Tsinghua University Press with independent intellectual property rights. Launched in 2022 with support from the Excellence Action Plan and Tsinghua University' s "World-Class STM Journal Cluster Development Plan," the platform offers the following advantages from the user perspective: (1) Full-media publishing and international dissemination. SciOpen requires DOI registration and resolution, international standard URLs, and establishes connections with indexing institutions (CSCD, Scopus, EI, Web of Science), libraries, third-party promotion platforms (EurekAlert, KUDOS, Altmetric, TrendMD), copyright-related entities, and publishing ethics organizations through data integration, platform integration, functional integration, portal integration, and plugins or components. The platform uses search engine opti-

mization to improve discoverability on Google, Google Scholar, Bing, and Baidu Academic, and collaborates with international science media and social media (ScienceNet, Facebook, Twitter, LinkedIn) to promote global academic dissemination. (2) Support for priority publishing of accepted manuscripts. SciOpen not only supports priority publishing but also displays manuscripts at various stages of the publishing process (including Just Accepted, Online First, In Press, and Issue formats) according to journal requirements. Priority publishing of accepted manuscripts is crucial for rapid academic achievement display and priority claim confirmation. (3) Support for enhanced publishing and scientific data publishing. Audio, video, supplementary figures, and text accompanying articles can be stored and displayed as supplementary content. Important article data can also be registered with independent DOIs and linked to the paper, facilitating global retrieval and use while enhancing paper credibility and journal visibility. (4) Statistical data and knowledge services for editorial offices. In the omnimedia publishing system, editors can view journal statistics including publication volume, clicks, views, downloads, favorites, article classification and ranking, article sharing link clicks, and editorial production and publishing work. Editorial offices can also obtain knowledge services such as annual publication and citation volume changes, journal knowledge domain coverage and hotspot analysis, author regional distribution, and paper funding sources. (5) Mobile mini-program development. With smartphone popularity exceeding computer usage, SciOpen' s mobile mini-program provides great convenience for users to search and read literature anytime, anywhere. (6) Simultaneous cover and back cover display. Many journals have both cover and back cover images. Simultaneous display is more author-friendly for those providing back cover images and encourages authors to actively provide cover images, whereas international publishers like Elsevier and Wiley only support single cover image display. (7) Diversified social media sharing. SciOpen' s social media sharing links include Twitter, Facebook, LinkedIn, as well as WeChat, Weibo, and QQ, which are more widely used by Chinese people. Elsevier' s sharing links include Twitter, Facebook, LinkedIn, and Reddit; Springer' s sharing links are placed at the end of articles as URL links only, without social media options and positioned inconspicuously at the bottom of webpages; Wiley' s sharing includes Twitter, Facebook, LinkedIn, and WeChat; Taylor & Francis includes Twitter, Facebook, LinkedIn, WhatsApp, Message, and WeChat. (8) Support for editorial office autonomous journal management. When cooperating with foreign publishing platforms, domestic English journals generally rely on platform staff to manage journal homepages, publish articles, and push messages. SciOpen supports editorial offices of hosted journals to manage journal production and publishing resources through the omnimedia publishing system, including journal portal management, journal-specific requirement settings, full-process management and publishing, special issue creation and publishing, in-journal article promotion, and related statistics.

SciOpen' s current shortcomings include: (1) Limited hosted journals and subject categories. With only 71 journals hosted on SciOpen as of December 2023,

the platform has few subject categories: physical sciences and engineering, informatics, life sciences and medicine, and humanities and social sciences, without secondary classifications. In comparison, Elsevier hosts 4,893 journals with primary categories in physical sciences and engineering, life sciences, health sciences, and humanities and social sciences, each further subdivided. For example, physical sciences and engineering is divided into chemical engineering, chemistry, computer science, earth and planetary sciences, energy, engineering, materials science, mathematics, and physics and astronomy, with further secondary classifications. This facilitates journals in finding more relevant fields and helps readers locate journals closely related to their research fields. Springer hosts 3,841 journals without separate subject classification, using alphabetical ordering instead. Wiley hosts 2,822 journals with 17 subject categories, each further subdivided by topic. Taylor & Francis hosts 3,109 journals with 12 subject categories, each further subdivided. (2) Insufficient transformation and dissemination of scientific paper press releases. Cooperation between digital publishing platforms and news media to publish high-quality research results or hotspots as short videos or press releases in real-time on internet platforms helps increase attention and expand influence, but this requires not only technical platform support but also active cooperation from hosted journals and authors in providing relevant materials. (3) Visualization dissemination is still in its infancy. SciOpen needs to improve the quality of key figures, audio, and video, and increase applications of interactive information graphics and interactive H5 content.

4.2 Optimization Suggestions for SciOpen

Based on comparison with similar platforms, we propose the following optimization suggestions for SciOpen:

First, increase support for subscription journals, hybrid journals, and Chinese-language journals to attract more journals to the platform. SciOpen currently primarily supports English open-access journals. To attract more journals, it should add support for subscription and hybrid journals, which may require adding subscription and pay-per-view functions. Moreover, as of the end of 2022, Chinese-language journals accounted for approximately 88% of China' s STM journals, with 173 bilingual journals. Most Chinese journals currently have English titles, abstracts, and keywords, and some have English extended abstracts and English figures and tables. As an international dissemination platform, supporting Chinese-language or bilingual journals would facilitate their international dissemination and help papers published in these journals gain international recognition. Supporting Chinese journals requires resolving barriers between literature identifiers and digital standards.

Second, increase journal search methods and improve advanced search accuracy and intelligent recommendation precision. Elsevier, Springer, Wiley, and Taylor & Francis all support journal search by initial letter, a function SciOpen currently lacks. As hosted journals increase, this search function should be added.

Additionally, while SciOpen currently supports quick and advanced search, improving advanced search accuracy and recommendation intelligence becomes increasingly important as journals, articles, and users grow.

Third, provide knowledge services for authors and readers. As the primary users of dissemination platforms, deeply exploring and providing corresponding knowledge services for authors and readers will greatly increase platform browsing and usage.

5 Integrating Data Interfaces to Build a Full-Process Digital Publishing Platform

A full-process digital publishing platform provides one-stop services from acquisition, editing, review, and proofreading to dissemination and knowledge services. Coordinated operation of all components can significantly improve efficiency and quality. For example, automatically calculating page charges in the operation platform based on typeset page numbers from the production platform can eliminate time-consuming and error-prone manual calculations. Synchronizing the latest proof versions from the production platform to the dissemination platform enables rapid publication of academic achievements. Furthermore, all three Excellence Action Plan-funded platforms are currently building knowledge service platforms. Integrating operation, production, and dissemination platforms can avoid overlapping or missing knowledge services and enable construction of a full-process, comprehensive, customized knowledge service platform including writing guidance, intelligent journal selection, topic planning, intelligent proofreading, journal databases, expert databases, and author databases, tailored to different user groups at various stages of academic paper publication.

We propose the following method to integrate data interfaces and connect these three platforms into a full-process digital publishing platform: The Fangzheng Cloud Platform supports typesetting of accepted manuscripts in doc or docx format. Establishing automatic Word manuscript transmission between the Tengyun Editorial System and Fangzheng Cloud Platform would achieve seamless connection between operation and production platforms. After completing typesetting and proofreading, Fangzheng Cloud Platform can export PDF, Rich-HTML, H5, full-text XML, Word, and other formats. Establishing automatic data acquisition between SciOpen and Fangzheng Cloud Platform would enable content publishing on the dissemination platform.

Regarding how to enhance the international influence of digital publishing platforms and achieve sustainable development, we suggest: During the initial platform construction phase, government should provide primary funding while ensuring alignment with international standards. After basic functions are completed, policy encouragement should guide domestic journals to actively join the platform, with construction and maintenance costs shared by hosted journals and government. As platform operation time, hosted journals, and users increase, platform functions and services will gradually improve and en-

ter a profit-making stage. At this point, the focus should shift to attracting renowned international journals, actively integrating into the international publishing ecosystem, and enhancing international visibility and discourse power.

The operation platform (Tengyun Editorial System), production platform (Fangzheng Cloud Platform), and dissemination platform (SciOpen) funded by the Excellence Action Plan have achieved basic functions of online submission and peer review, digital production, and international dissemination, but still require optimization. From the user perspective, the Tengyun Editorial System needs to expand foreign journal resources in its academic misconduct detection database, increase global reviewer information, and improve usability. The Fangzheng Cloud Platform needs to provide technical support services for typesetting and add online interactive functions. The SciOpen platform needs to expand its supported journal types. Furthermore, these three platforms currently primarily serve domestic journals with low international recognition and operate independently, not yet forming an integrated full-process digital publishing platform and knowledge service system.

A limitation of this study is that the compared similar products are not comprehensive—for example, we did not compare with the SciEngine full-process platform independently developed by *Science China* Press. This will be the focus of our next investigation.

We believe that with strong national policy support, China will gradually build an international, intelligent digital publishing service platform integrating content acquisition, editing, typesetting, and dissemination, while providing efficient and precise knowledge services such as academic profiling, research analysis, and academic social networking. This will safeguard the dissemination and utilization of China' s scientific and technological innovation achievements, protect national scientific literature data copyrights, and promote the prosperity and global development of China' s STM journals.

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