

Research and Analysis of the “Subscribe to Open” (S2O) Model

Authors: Yu Linxi, Kang Yinhua, Yao Sihui, Yao Sihui

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

Abstract

[Purpose] EDP Sciences in France began piloting the “Subscribe to Open” (S2O) model in 2020. This paper systematically investigates the implementation process and outcomes of the model, providing insights and case references for academic journals transitioning to open access.

[Method] This paper conducts a detailed analysis of the S2O model’s background, conversion timeline, publication costs, subscription revenues, and other aspects through literature review, web-based research, and statistical data analysis.

[Results] The S2O program received funding and support from institutions and foundations including the French Society for Industrial and Applied Mathematics (SMAI), the Joint Information Systems Committee (JISC) in the UK, the library consortium Knowledge Unlatched (KU), and the French National Fund for Open Science (FNSO). According to the financial transparency report released by EDP, when comparing the 2022 subscription revenues of the six S2O journals to the baseline year 2020, three journals exceeded their 2020 levels while three remained essentially stable; consequently, all six journals participating in the program successfully achieved OA in 2021 and 2022.

[Conclusion] As an alternative and revolutionary diamond open access model, S2O has gained recognition from the global academic publishing community, with an increasing number of journals and publishers adopting this model. China’s current academic publishing development is also oriented toward open access, and several sizable journal clusters have already been formed. For these clusters that possess publishing discourse power, and upon thorough investigation of subscriber willingness, they can actively draw upon EDP’s pilot experience and attempt to replace APCs with the S2O model to alleviate authors’ financial burden.

Full Text

Research and Analysis of the “Subscribe to Open” (S2O) Model

Yu Linxi¹, Kang Yinhua², Yao Sihui^{2*}

¹ Editorial Office of Chinese Journal of Natural Medicines, China Pharmaceutical University, No. 24 Tongjia Lane, Gulou District, Nanjing 210009, China

² Editorial Office of Progress in Pharmaceutical Sciences, China Pharmaceutical University, No. 24 Tongjia Lane, Gulou District, Nanjing 210009, China

Abstract:

[Purpose] Since 2020, EDP Publishing House in France has been piloting the “Subscribe to Open” (S2O) model. This article systematically explores the implementation process and results of the model, providing ideas and case references for the open access transformation of academic journals. [Methods] This article uses literature research, network research, and data statistical analysis to analyze the background, conversion timeline, publishing cost, subscription revenue, and other aspects of the S2O model in detail. [Findings] The S2O program received funding and support from institutions and funds such as the French Society for Mathematical Applications and Industry (SMAI), the Joint Information Systems Committee (JISC), the Library Alliance Knowledge Unlatched (KU), and the French National Open Science Foundation (FNSO). According to the financial transparency report released by EDP, the subscription revenue of six S2O journals in 2022 compared to the benchmark year 2020, three journals exceeded 2020, three journals remained stable. So, all six journals participating in the plan in 2021 and 2022 have successfully OA. [Conclusions] As an alternative and revolutionary diamond open access model, S2O has been recognized by the global academic publishing community, and more and more journals and publishers are adopting this model. At present, the development direction of academic publishing in China is also open access, and some journal clusters of acceptable scale have been formed. For these journal clusters with publishing discourse power, while fully researching the willingness of subscription users, we can actively learn from the pilot experience of EDP and try to replace APC with S2O model to reduce the economic burden on authors.

Keywords: EDPS; S2O model; Open access to diamonds; Annual Reviews; Journal Transparency report

Open access has gradually become the mainstream academic publishing model. Motivated either by a sense of mission or by the need to comply with various national open access transition agreements, academic publishers are actively seeking viable pathways to smoothly transition from subscription-based to open access models [1]. Some publishers have adopted the gold OA model that charges article processing charges (APCs), but this approach is not suitable for all journals. For instance, most articles in social science journals lack research funding

support, forcing authors to bear the APC costs themselves, making it extremely difficult for such journals to adopt the APC model [2]. Beyond disciplinary differences, the high cost and opaque pricing of APCs have also led many scholars to view them with skepticism [3].

In response to these challenges, some publishers have sought alternative transition models. “Subscribe to Open” (S2O) is an emerging, alternative, and revolutionary open access model that aims to convert subscription journals into APC-free open access journals through fair, equitable, and sustainable means. Under this model, publishers (or journals) directly convert annual library subscription fees into open access fees. If subscription revenue reaches the required threshold for open access, the publisher makes the journal’s current year content open access, and authors are not required to pay APCs. With sufficient subscription renewals, authors can subsequently publish in S2O journals free of charge. However, if a journal fails to meet its subscription renewal target in a given year, it reverts to subscription-only access. Nevertheless, content published under the S2O model during the renewal period becomes permanently open access once the period ends [4].

The first publisher to propose and adopt the S2O model was the established publisher Annual Reviews, founded in 1932. Annual Reviews invites renowned experts across various disciplines to write annual reviews and highlight frontier topics, currently publishing over 50 review journals spanning 45 disciplines. Unlike typical academic journals, Annual Reviews operates on an invitation-only basis where authors do not pay to publish. To achieve OA while maintaining normal operations, Annual Reviews began searching for stable and universally applicable open access transition pathways in 2015. In 2017, with funding from the Robert Wood Johnson Foundation, Annual Reviews piloted open access for the *Annual Review of Public Health* and monitored its impact. Usage reports showed that full-text downloads in May 2019 increased eightfold compared to May 2016. In 2018, supported by multiple subscribers and the Annual Reviews Innovation Fund, the journal remained open access before reverting to subscription access in 2019. Given the substantial influence boost after briefly implementing open access, Annual Reviews proposed the Subscribe to Open model, hoping to sustain open access without charging APCs [5].

Although S2O is a relatively new model, it builds upon collaborative initiatives such as SCOAP3 and Knowledge Unlatched and is considered capable of accelerating the open access transition, gradually becoming a recognized method for achieving open access. Since 2019, nine non-profit or small academic publishers, including Annual Reviews, the European Mathematical Society Publishing House, EDP Sciences, and De Gruyter, have launched S2O pilots. Currently, global S2O journals cover disciplines including biology, medicine, law, mathematics, physics, and more [6].

China’s academic publishing industry is currently developing rapidly, with open access increasingly accepted and adopted by publishers. KeAi Publishing has published dozens of OA journals, and many high-starting-point new journals se-

lected for the “China Science and Technology Journal Excellence Action Plan” are also OA [7]. However, the S2O model has only attracted publisher attention in the last two years, and most domestic OA journals still use the APC model, resulting in limited attention and research on the S2O model in the publishing community. Cui Liyuan has outlined the background and development of the S2O model and briefly introduced 75 journals using it [8]; Zhao Yan et al. have discussed the conversion of library subscription funds to open access journal membership fees from a library perspective [9]. However, no existing research has conducted in-depth studies on the operations of publishers that have adopted the S2O model. This study aims to examine the specific case of EDP Sciences, which has implemented the S2O model, track the operational status of its journals, objectively evaluate the advantages and disadvantages of S2O and its development prospects, and provide references and recommendations for the open access transformation of Chinese academic journals.

1.1 Background of EDP Sciences

EDP Sciences is a French publisher specializing in scientific and technical publishing, founded in 1920 by renowned scientists including Nobel Prize winners Marie Curie and Paul Langevin. As a proponent of open science, many of its journals follow open science principles. The publisher currently produces 75 scientific journals, 58 of which are in English. In 2019, China Science Publishing & Media Ltd. signed an equity acquisition agreement with four French societies—the French Physical Society, French Chemical Society, French Optical Society, and French Society of Applied and Industrial Mathematics—to acquire 100% of EDP Sciences’ equity, making it the overseas publishing and dissemination platform of Science Press [10]. As a publisher long committed to open access, EDP Sciences began piloting the S2O model in 2020 [11].

1.2 S2O Cycle and Objectives at EDP Sciences

In practice, assuming the current year is Year Y, EDP Sciences’ sales department begins contacting existing subscribers in October of Year Y-1 to solicit their renewal intentions for Year Y, typically concluding this process by February of Year Y. Based on subscription volume, EDP Sciences decides whether to adopt the S2O model in Year Y. If the required subscription level for open access is reached, the journal enters the S2O annual cycle, which runs until February of Year Y+1. If the subscription target is not met, the journal reverts to subscription-only access. This cycle repeats annually to maintain continuous open access status and avoid interruption periods, thereby achieving persistent open access for journals that have transitioned to the S2O model [11]. The detailed cycle is illustrated in Figure 1 [Figure 1: see original paper].

EDP Sciences established 2020 as the baseline year, setting the S2O renewal target at 95% of 2020 subscription revenue. Once a journal is deemed capable of adopting S2O, articles published under the S2O model remain permanently open/free access, while older content that was behind paywalls stays behind

paywalls. Articles for which APCs were paid or that were published open access under transformative agreements remain permanently open access.

1.3 Timeline of Mathematics Journal Conversions at EDP Sciences

EDP Sciences publishes multiple mathematics journals, six of which have transitioned to the S2O model: *Mathematical Modelling of Natural Phenomena* (MMNP); *ESAIM: Control, Optimisation and Calculus of Variations* (ESAIM:COCV); *ESAIM: Mathematical Modelling and Numerical Analysis* (ESAIM:M2AN); *ESAIM: Probability and Statistics* (ESAIM:PS); *RAIRO-Theoretical Informatics and Applications* (RAIRO-TIA); and *RAIRO-Operations Research* (RAIRO-OR). These journals cover theoretical and applied mathematics and informatics. Except for RAIRO-TIA, which is published solely by EDP Sciences, the other five are published in partnership with the French Society of Applied and Industrial Mathematics (SMAI).

On March 5, 2020, MMNP became the first pilot journal for the S2O program. EDP Sciences evaluated the journal's subscription revenue and determined that MMNP had secured sufficient support to become open access under the S2O model. Following MMNP's successful pilot, ESAIM:COCV, ESAIM:M2AN, ESAIM:PS, RAIRO-TIA, and RAIRO-OR also transitioned to open access starting January 2021 [12]. Since MMNP's pilot launch in 2020, EDP Sciences and SMAI have undertaken extensive work to advance the S2O program. In 2021, the S2O model received endorsement from the European Union's Plan S as an OA model compliant with Plan S standards [13]. On March 8, 2022, EDP Sciences and SMAI jointly announced that all six mathematics journals had met their subscription targets and would remain open access.

Participating Journals and Their S2O Participation Timeline

1.4 Additional Benefits for Subscribing Institutions

To encourage continued subscriptions, EDP Sciences offers subscribers additional benefits, namely access to backfiles of certain mathematics journals. Before 2021, MMNP, ESAIM:COCV, ESAIM:M2AN, and ESAIM:PS participated in a five-year paywall removal project, making all their content freely accessible during that period. However, starting in 2022, some backfile content from these journals will remain behind paywalls, accessible only to subscribers participating in the S2O model. Content from RAIRO-OR and RAIRO-TIA has been open access since 1999 until their transition to S2O.

Mathematics Journal Access Rights for Subscribing Institutions in the S2O Program

1.5 Supporting Institutions for the S2O Model

To ensure successful transformation of all S2O journals, EDP Sciences established agreements with multiple subscribing institutions. On November 10, 2020,

EDP Sciences formed a deep partnership and signed an agreement with the UK's Joint Information Systems Committee (JISC). From January 1, 2021, to December 31, 2023, if a sufficient number of JISC member institutions subscribe to these journals (through JISC or other channels), all six journals will be published under the S2O model. If a journal fails to meet the subscription threshold for open content in a given year, EDP Sciences will provide green open access compliance options to ensure authors can meet funder requirements. Most importantly, JISC members selecting this package receive competitive subscription pricing [14].

Recognizing the natural year-over-year subscription churn and the exceptional economic circumstances of 2020-2021, which increased free-rider risks, EDP Sciences partnered with Knowledge Unlatched (KU) in spring 2021, signing a three-year agreement to introduce the S2O model to numerous libraries worldwide [15]. EDP Sciences requires libraries and institutions currently subscribing to any of the six journals—MMNP, ESAIM:COCV, ESAIM:M2AN, ESAIM:PS, RAIRO-TIA, and RAIRO-OR—to maintain their subscriptions during the agreement period, offering an “upsell” service that provides institutions with bundled packages. These initiatives demonstrate that EDP Sciences' successful implementation resulted from establishing strong cooperative relationships with multiple international organizations and institutions. They also illustrate that global digital publishing platforms like KU, which provide open access books and journals, are actively working to introduce the S2O model to more libraries to continue influencing and shaping the OA journal publishing landscape.

1.6 National Funding Support for the S2O Model

Beyond securing support from international organizations, EDP Sciences and SMAI applied for funding from the French National Open Science Foundation (FNSO) Open Science Publishing Program to smoothly implement the S2O model and obtain additional financial support. FNSO support enables journals to transition to open access on a long-term basis [16]. The publishing fund is primarily used in three areas: (1) Transition preparation: addressing backlogs in RAIRO-OR, ESAIM:COCV, and ESAIM:M2AN. In early 2021, these journals published special issues to clear backlogged articles, ensuring subsequent accepted articles could be made OA more quickly. (2) Commercial activities: such as retaining existing subscribers through discounted subscription fees, attracting new subscribers, and encouraging single-journal subscribers to upgrade to journal packages. (3) Marketing activities: promoting the S2O model to various institutions through academic events, press releases via social media, and other means.

Additionally, as part of France's Diamond OA Action Plan, EDP Sciences' S2O program received funding from CNRS (French National Center for Scientific Research) in 2022, which was included in total revenue to help all journals in the program continue publishing openly under challenging economic conditions, covering subscription management and publishing costs [17]. Undoubtedly, na-

tional publishing fund support is crucial for EDP Sciences to find long-term partners, maintain low subscription prices, and promote the S2O model.

2. Financial Transparency of Journals Adopting the S2O Model

Financial transparency is a frequently discussed topic in academic publishing and a fundamental concern for all stakeholders in the S2O model, particularly librarians. In an online survey report initiated by Annual Reviews, respondents ranked “transparent pricing” as the most important issue. As an advocate for open science, EDP Sciences published its first annual S2O program report in May 2021, detailing subscription price evolution, renewal targets, publishing costs, and other key measures [18]. In early 2022, EDP Sciences released its second transparency report, updating the metrics published in the 2021 report—such as subscription price changes, renewal targets, publishing costs, and other key measures—and adding new indicators like publishing statistics and per-article subscription prices [19].

2.1 Analysis of Subscription Prices and Publication Volume

Regarding subscription prices, from 2019 onward, the six mathematics journals experienced year-over-year price increases ranging from 0% to 3%, except for RAIRO-RO, which increased by 11% in 2020 due to expanding from five to six issues annually to accelerate publication workflows. In 2021, considering the COVID-19 pandemic impact, EDP Sciences froze subscription prices to ensure smooth program implementation. In 2022, accounting for increased article volume and publication speed, subscription prices for all six journals rose by 5% [19]. As shown in the table below, since the S2O program’s launch, the average price increase for each journal has been approximately 2%, except for RAIRO-RO. Correspondingly, ESAIM:M2AN increased its issues per volume to six, while other journals moved to publishing a single “open volume” annually without issue numbers.

Evolution of Journal Subscription Prices and Year-over-Year Growth Since 2019 (Euros)

Alongside subscription prices, the number of articles and pages published per journal also increased. Table 4 shows substantial growth in pages and article numbers for ESAIM:COCV, ESAIM:M2AN, and RAIRO-RO. Overall, article numbers increased by 69 from 2019 to 2020 and by 56 from 2020 to 2021. Page numbers increased more significantly: total pages reached 10,493 in 2020, up 1,779 pages (20.4%) from 8,714 in 2019, and further increased to 12,020 pages in 2021, adding another 1,527 pages. These figures exclude special issues; including special issues, total pages reached 17,079 in 2021. Thus, mathematics journal collections have seen annual article volume growth of 10% to 20%, while subscription prices have only increased by approximately 2% annually, meaning the growth in articles and pages far outpaces subscription price increases,

providing subscribing institutions with increasingly more content each year.

Beyond journal subscription prices, per-article subscription price—a common metric for evaluating subscription value—also reflects cost-effectiveness. In 2021, the per-article subscription price for five of the six journals was lower than in 2019, with only ESAIM:PS showing a higher price. The median price for subscribing to an article in a mathematics journal is currently \$17.56 per article, with only one of EDP Sciences' six journals priced above this average, demonstrating that the publisher offers subscribers favorable pricing.

Evolution of Article Numbers and Pages with Year-over-Year Percentage Growth

2.2 Subscription Status of S2O Journals

In its 2022 transparency report, EDP Sciences compiled subscription data for 2021 (as of December 2021) and compared it with 2020. Table 5 shows that by the end of February 2021 (the normal renewal deadline), only MMNP and ESAIM:PS met the 95% target; other journals fell short. Considering the pandemic's impact, EDP Sciences extended the renewal period to the end of April. Despite this, only two journals exceeded 95% of 2020 levels, yet EDP Sciences opened all journal content. By December's end, MMNP and ESAIM:PS subscription revenues surpassed 2020 levels at 106.6% and 102.7%, respectively, while ESAIM:COCV, RAIRO-ITA, and ESAIM:M2AN reached 94%, 92.4%, and 94.4% of 2020 revenues [18-19].

By the end of February 2022, EDP Sciences summarized 2022 renewal data. MMNP, ESAIM:PS, RAIRO-RO, RAIRO-ITA, and ESAIM:M2AN all exceeded 95% of 2020 baseline subscription revenue, with the worst-performing journal, ESAIM:COCV, still reaching 93.8%. This success was partly attributed to the journal package sales agreement with Knowledge Unlatched and the 2022 subscription price increases. Overall, 2022 subscription renewals met expectations, leading EDP Sciences and SMAI to continue opening all journals [18-19].

Subscription Revenue as Percentage of 2020 Baseline

2.3 Financial Revenue as Percentage of Publishing Costs

To more accurately set subscription prices, EDP Sciences calculated per-article publishing costs and revenues. For S2O program journals, per-article publishing costs range from €1,000-1,200 (excluding profit), covering seven items including editorial office expenses, typesetting and design, website hosting, and storage. For total cost calculations, EDP Sciences estimates average per-article publishing cost at €1,000, making total publishing costs equal to article count \times €1,000. For total revenue calculations, EDP Sciences divides income into three parts: institutional subscription fees, publishing fees paid uniformly through France's national subscription and publishing agreement, and minimal APC revenue. Using this method, EDP Sciences calculated revenue as a percentage of publish-

ing costs for the entire S2O program for 2020–2021. Overall, journals operated at a loss in both years.

Using 2020 as the baseline, subscription revenue and national agreements only covered 62% of publishing costs, though the S2O renewal target was 95% of 2020 subscription revenue for 2021 renewals. Compared to 2020, more articles were published in 2021, yet traditional subscription revenue was only 91% of the previous year’s level, while subscription prices were frozen in 2021. Consequently, subscription revenue and French national agreements covered only 51.6% of production costs in 2021, rising to 53.8% with institutional and individual support. Only ESAIM:M2AN and RAIRO-ITA were individually profitable, with ESAIM:M2AN—the largest and most successful journal in the portfolio—partially cross-subsidizing other journals [18–19].

3. Implications from EDP Sciences’ S2O Program

S2O is a pragmatic funding model that is essentially a crowdfunding model, but not a voluntary donation model [20]. It is particularly suitable for publishers whose subscription prices can cover publishing costs, have relatively low overall costs, and currently rely little on APC revenue. Publishers can convert their entire journal portfolio from closed to OA at once or pilot the model before phased conversion. This model offers publishers considerable flexibility: if participation is insufficient—for example, if some subscribers delay renewal hoping to gain access without participating—content remains closed. Since publishers cannot guarantee all subscribers will accept the invitation, institutions that value content access must either subscribe conventionally (at full price) or participate in S2O (at a discount) to ensure continued access.

Since launching its S2O program in 2020, EDP Sciences has published two transparency reports detailing publishing, subscription, and revenue data for 2020 and 2021. During these years, subscription price increases for EDP Sciences’ mathematics journals were modest, yet most journals saw substantial increases in article volume and pages compared to 2019, significantly improving subscription value for subscribing institutions. However, these substantial page increases also drove up costs, and although subscription revenue remained relatively stable compared to previous years, it only covered about half of publishing costs. Moving forward, EDP Sciences must continuously reduce publishing costs, attract new subscribers (while retaining existing ones), and explore new funding sources to sustain both publishing scale and open access. This provides valuable experience for subsequent publishers hoping to achieve open access through S2O.

As a relatively new model, S2O is also a Plan S-compliant open access model, with increasing numbers of publishers experimenting with it. China’s academic publishing industry is currently in a period of vigorous development, with more journals and publishers entering the international stage. Open access is the major trend in academic publishing, and successfully adopting the S2O model

would undoubtedly increase a publisher's or journal's influence. This approach significantly reduces the economic burden on authors, causes no loss to publishers if they can maintain break-even operations, and does not increase management burdens for libraries, which can use existing subscription payment processes. However, the authors offer the following recommendations for program implementation.

3.1 Eliminating “Free-Rider” Behavior

The S2O model works because it serves subscribers' economic interests. Journal subscriber groups are large and diverse, lacking social cohesion, which limits publishers' ability to rely on pro-group behaviors (including altruism, anticipated reciprocity, and other social incentives) to motivate institutional participation in collective funding. Simultaneously, the S2O model can trigger “free-rider” behavior: once content becomes publicly available, it becomes economically rational for subscribers to stop paying. While some open access-supporting institutions may initially pay on time, some may withdraw their subscriptions over time. If enough institutions withdraw support, the model fails. Therefore, a mechanism is needed to encourage institutional participation by making S2O participation align with institutional interests.

To eliminate free-riding, EDP Sciences uses backfile access as an additional incentive for S2O participation. If the S2O proposal succeeds in a given year, EDP Sciences provides participating institutions with free access to backfile content. If the conversion fails, backfile content remains behind paywalls. This benefit repeats annually. Year-to-year, subscribers must either participate in S2O (and receive a discount) or subscribe conventionally (and forgo the discount) to ensure continued access to that year's content. Even if the conversion fails, participating institutions receive the S2O discount, strengthening subscribers' economic benefits. In other words, regardless of what other subscribing institutions do, institutions participating in S2O benefit.

3.2 Focusing on Current Subscribers

The focus should be placed on journals' current subscribers for several reasons. First, existing subscribers have already demonstrated demand for the journal, providing a basis for formulating S2O invitations that require each institution to either participate in S2O or subscribe conventionally to ensure continued access.

Although S2O relies on current subscriber participation, multi-channel fundraising is also necessary. For example, actively applying for national publishing fund subsidies and reaching cooperation agreements with library consortia can supplement the financing model and increase S2O success probability. Publishers can identify high-usage institutions that are not current journal subscribers but show substantial journal access under the S2O model. Such institutions can be targeted to ensure their researchers continue accessing content they have demonstrated need for.

3.3 Maintaining Existing Library Management Models

For libraries, S2O is a very friendly model. In the S2O model, journal costs are transparent, so the more libraries that subscribe, the lower the subscription price. Moreover, the S2O model does not add any workload; publishers communicate with libraries through traditional subscription channels, including established workflows, subscription agent relationships, and invoicing processes. Additionally, using existing procurement processes and library budgets minimizes disruption to subscribers. The S2O model represents library crowdfunding, not altruism, with no coordination required among subscribing institutions. If a publisher wishes to discontinue S2O for any reason, the recurring nature of invitations and use of existing subscription channels simplify the return to traditional subscription models. From this perspective, libraries should form national-level consortia to support publishers or journals adopting S2O to reduce subscription pressure.

3.4 Controlling Costs and Increasing Funding Sources

As EDP Sciences' transparency reports show, subscription revenue and national funds only covered 53.8% of costs in 2021, largely because publishing costs increased significantly that year as journals published special issues to clear backlogged manuscripts. Consequently, the year-over-year growth in article numbers and pages far exceeded subscription price increases, raising sustainability risks for the model. A key guarantee of S2O model success is annual solicitation to ensure continuous institutional participation and stable revenue, meaning subscription revenue will not change substantially year-to-year. If publishing costs rise significantly, the model risks failure. To address publishing cost issues, publishers need to raise additional funds to cover revenue gaps. When subscription revenue declines, funding sources can be appropriately expanded, such as through subscription price increases, agreements with library consortia, pay-per-view charges, member subscriptions, etc. [21].

4.1 Advantages for Chinese Journals Adopting the S2O Model

Through in-depth analysis of EDP Sciences' S2O model, the authors believe journals suitable for S2O must meet the following conditions: First, journals need advanced publishing philosophies, understanding international open science trends and willingness to actively experiment—meaning their goal is maximizing dissemination efficiency rather than pure profit. Second, journals must control their publishing and distribution rights, with the ability to negotiate and sign agreements with libraries independently. Finally, the model requires unified scheduling and management at the professional journal cluster level. From these three perspectives, some Chinese journals and publishers already fully meet the conditions for adopting the S2O model.

Since 2019, seven national ministries and commissions have jointly launched the “China Science and Technology Journal Excellence Action Plan,” with a clear

orientation toward cluster-based publishing. Currently, China has numerous society and publisher journal clusters, such as the China Association of Chinese Medicine, the first large-scale publishing cluster—Nonferrous Metals Journal Publishing Cluster—and China Science and Technology Publishing House. These clusters and publishers are pioneers in China’s academic journal “sailing overseas” initiative, possessing independent publishing rights. Most of these cluster journals embrace open science principles and publish via open access. Some are high-starting-point new journals with adequate funding support. From the EDP Sciences case, if they had not substantially increased pages in 2020 and 2021, subscription revenue and cost expenditures could have remained balanced. For domestic journals, page counts per issue are generally fixed, without hidden concerns about substantially increased expenditures. In these respects, Chinese journals possess the prerequisites for adopting the S2O model.

4.2 Challenges for Chinese Journals Adopting the S2O Model

EDP Sciences’ S2O implementation process placed great emphasis on three aspects: international cooperation, transparency, and promotion. In international cooperation, EDP Sciences established strong partnerships with KU and JISC, working closely with subscribers through them to secure support. In transparency, EDP Sciences published public financial transparency reports, making costs and revenues transparent—an important reason for gaining library support.

Chinese journals are relatively weak in these three areas, with virtually no journals publishing transparency reports and needing to strengthen international cooperation. The authors recommend that professional journal clusters reaching certain scales should start domestically by analyzing domestic academic institutions, preparing cost budgets, determining subscription prices, and then establishing connections with these institutions’ libraries to understand their subscription willingness, offering certain subscription discounts and backfile access rights to secure domestic library support. After building a domestic foundation, they can gradually contact library consortia or academic institutions that support the S2O plan. The authors believe this is also a way for Chinese journals to quickly go global.

5. Conclusion

The S2O model builds upon existing academic publishing workflows and infrastructure while following new principles of pricing transparency. As a revolutionary diamond open access model, it is very author-friendly and solves open access challenges for journals that cannot adopt the APC model due to disciplinary or article type constraints [22]. With support from the S2O practice community, librarians, researchers, publishers, and funders are working together to advance this model. However, because it has emerged relatively recently and few publishers release financial transparency reports, this study has certain limitations.

As an open science advocate, EDP Sciences followed transparency principles

well when piloting its S2O program, systematically publishing financial revenue and expenditure data. This approach helps increase subscriber trust and cooperation likelihood, with transparency report data showing most subscribing institutions remained actively engaged after journal transformation. Following the mathematics journals' S2O conversion, EDP Sciences announced in 2022 that *Radioprotection* would become its eighth S2O journal, officially OA from 2023. Including Annual Reviews, 15 publishers will convert 151 journals to OA via the S2O model in 2023, making S2O a viable OA method alongside APCs and read-and-publish agreements. More journals and publishers will undoubtedly try this model in the future, and many Chinese journals already have the conditions for transformation. Therefore, the authors will continue monitoring developments to provide recommendations for China's academic publishing open access transformation.

References

- [1] 郁林羲. Elsevier 开放获取政策及措施研究 [J]. 科技与出版, 2020(5) : 89 – 98.
- [2] Quaderi N, Hardcastle J, Petrou C, 等. S 计划的足迹: 对于学术出版行业格局的意义 [J]. 科学观察, 2019, 14(6) : 48 – 61.
- [3] Mark Piesing. At Frankfurt: What is 'Plan S' and why are many publishers worried? [EB/OL]. [2021-02 -15]. <https://publishingperspectives.com/2018/10/what-is-plan-s-and-whyare-many-publishers-worried/#.W8RTfjUDn1w.twitter>.
- [4] EDP Science. Astronomy & Astrophysics Subscribe to Open 2022 Transparency Report published. [EB/OL]. [2023-04-28]. <https://www.edpsciences.org/en/news-highlights/2002-mathematical-modelling-of-natural-phenomena-transitions-to-open-access-under-the-subscribe-to-open-model>.
- [5] S2O - A Goal Achieved.[EB/OL][2023-04-28].<https://www.annualreviews.org/S2O>.
- [6] Annual Review. Subscribe to open. [EB /OL] [2023-04-28]. <https://www.annualreviews.org/pb-assets/assets/images/marketing/subscribe-to-open/subscribe-to-open-informational-slide-show1552596928053.pdf>.
- [7] 丁佐奇, 李楚威. 由”中国科技期刊卓越行动计划”入选期刊看我国 OA 出版现状及展望 [J]. 中国科技期刊研究, 2022, 33(11): 1561-1568.
- [8] 崔丽媛, 刘春丽. “为开放而订阅” (S2O) : 从订阅期刊转向 OA 期刊的新兴模型 [J]. 图书情报工作, 2021, 65(22): 65-73.
- [9] 赵艳, 张晓林, 郑建程. 图书馆文献订购经费向开放出版经费转化: 目标、挑战与策略 [J]. 图书情报工作, 2016, 60(1) : 5-11.
- [10]EDP Science. Journals. [EB/OL]. [2023-04-28]. <https://publications.edpsciences.org/#!s=current&l=en>.
- [11]EDP Science. Mathematical Modelling of Natural Phenomena transitions to open access under the Subscribe to Open model. [EB/OL] [2023-04-28]. <https://www.edpsciences.org/en/news-highlights/2002-mathematical-modelling-of-natural-phenomena-transitions-to-open-access-under-the-subscribe-to-open-model>.
- [12] EDP Science. Successful Subscribe to Open pilot paves the way for a ground-breaking roll out across the EDP Sciences maths portfolio. [EB/OL] [2023-04-30]. <https://www.edpsciences.org/en/news-highlights/2072-successful>

subscribe-to-open-pilot-paves-the-way-for-a-ground-breaking-roll-out-across-the-edp-sciences-maths-portfolio.

[13] Plan S. cOAlition S endorses the Subscribe to Open (S2O) model of funding open access. [EB/OL] [2023-04-30]. <https://www.coalition-s.org/coalition-s-endorses-the-s2o-model-of-funding-oa/>.

[14] EDP Science. Jisc and EDP Sciences conclude a 'Flexible Maths Journals Agreement 2021-2023.[EB/OL][2023-04-30]. <https://www.edpsciences.org/en/news-highlights/2194-jisc-and-edp-sciences-conclude-a-flexible-maths-journals-agreement-2021-2023>.

[15] EDP Science. EDP Sciences and Knowledge Unlatched announce a Subscribe-to-Open collaboration. [EB/OL][2023-04-30]. <https://www.edpsciences.org/en/news-highlights/2332-edp-sciences-and-knowledge-unlatched-announce-a-subscribe-to-open-collaboration>.

[16] EDP Science. SMAI awarded funding from Fonds national pour la science ouverte (FNSO) for Subscribe to Open maths journals published in partnership with EDP Sciences. [EB/OL] [2023-05-03]. <https://www.edpsciences.org/en/news-highlights/2206-smai-awarded-funding-from-fonds-national-pour-la-science-ouverte-fnso-for-subscribe-to-open-maths-journals-published-in-partnership-with-edp-sciences>.

[17] EDP Science. EDP Sciences and SMAI Subscribe-to-Open mathematics programme receives support from the CNRS. [EB/OL] [2023-05-03]. <https://www.edpsciences.org/en/news-highlights/2539-edp-sciences-and-smai-subscribe-to-open-mathematics-programme-receives-support-from-the-cnrs>.

[18] EDP Science. Subscribe-to-Open 2021 Transparency Report published. [EB/OL] [2023-05-03]. <https://www.edpsciences.org/en/news-highlights/2296-subscribe-to-open-2021-transparency-report-published>.

[19] EDP Science. Subscribe-to-Open 2022 Transparency Report for maths journals provides new metrics. [EB/OL][2023-05-03]. <https://www.edpsciences.org/en/news-highlights/2545-subscribe-to-open-2022-transparency-report-for-maths-journals-provides-new-metrics>.

[20] Berghahn Journals. BOA-S2O participants [EB/OL] [2023-05-03]. <https://www.berghahnjournals.com/page/boa-participants/boas2o-participants>.

[21] IWA PUBLISHING. Licenses[EB/OL][2023-05-04]. https://iwa.silverchair.com/Open_{Access}/pages/licenses.

[22] 郁林羲. 全球开放获取运动中开放获取模型探析 [J]. 科技与出版, 2020(8) : 109 – 117.

Author Contribution Statement:

Yu Linxi: Conceptualization, material collection, writing, revision

Kang Yinhua: Material collection, revision

Yao Sihui: Material collection, revision

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

Source: ChinaXiv – Machine translation. Verify with original.