Research on the Development of Open Access Resources

Authors: Gu Liping

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Abstract

From the perspectives of economic cycle theory and industrial innovation theory, this study analyzes the development patterns of open access resources and systematically reviews the relevant policies of major scientific and technological powers, principal academic institutions, and leading international publishing organizations. It further discusses the practical challenges faced by Chinese libraries and appropriate information policies.

Full Text

Introduction

In China, the library community serves as a crucial foundational force supporting the harmonious development of an information-based society. As a vital platform for the procurement, presentation, circulation, and evaluation of academic information resources, libraries have historically played the role of safeguarding readers' rights to knowledge access by paying substantial publication fees for "valuable publications."In other words, academic information resources represent both the medium through which libraries ensure knowledge access for researchers and the public, and the intellectual objects that libraries tirelessly develop. The processes of verifying research content and data, reviewing them based on importance, timeliness, and relevance, and managing their presentation, acquisition, linking, long-term preservation, and reuse all present significant challenges [1]. At the China Open Access Week in October 2012, participants intensively discussed multiple transformations in information resources, including: policies of foreign educational and research institutions supporting open papers (funder requirements, funding mechanisms, cost control, rights demands) [2]; traditional publishers' open publishing policies (author copyright retention, content openness levels, open publishing services, open publishing costs, hybrid open access discounts, value-added services, etc.) [3]; the SCOAP3 open publishing model (international joint management, national information assurance mechanisms,

shifting subscription fees to publishing fees) [4-5]; open journal evaluation and selection (indicator sets across three dimensions: journal quality, openness level, and service capacity) [6]; and libraries' open access strategies [7].

In essence, the structural contradictions have intensified, creating increasingly mature conditions for "disruptive innovation that breaks existing structures and drives new development." We argue that the primary axis of this "disruptive innovation" at this moment is open access information resources.

Analyzing the Growth Inflection Point of Academic Information Resources Through Economic Cycle Theory

In the traditional print resource era, the research findings of an individual scientist, research group, or scientific community required numerous steps before public dissemination: submission and correspondence, three rounds of review and discussion, peer evaluation, expert deliberation, editorial board meetings, and manuscript editing by publishers; followed by printing house processes including plate-making, proofreading, color separation, die-making, printing, cutting, binding, inspection, and packaging; then publishers' processes of receipt, shipping, integration, unpacking, sorting, packaging, and shelving; then agents' processes of inventory, unpacking, repackaging, and transportation; and finally libraries' processes of checking, grouping, cataloging, delivery, shelving, and circulation (not to mention maintenance, repair, reproduction, interlibrary loan, removal, sealing, and weeding).

In the early electronic resource era, these processes continued, but integrators reproduced electronic versions of files after publishers or publishing houses, delivering them to libraries through direct sales or agency models attached to print resource acquisition procedures, with media formats evolving from CDs and DVDs to hard drives and network IPs. In the mid-electronic resource era, these processes persisted, but integrators expanded literature types and scope: first, by digitizing print content from before the electronic resource era; second, by increasing journal and book titles; and third, by enhancing search system functions and value-added applications. Integrators could be categorized into three types: abstract-only, full-text, and mixed abstract/full-text (the latter being most common); while sales models included print-only, electronic-only, and print-electronic bundles (again, the latter predominating), with overlapping, repetitive, and reusable phenomena among them.

From this brief description of three stages, several structural factors become apparent: increased media types, expanded categories, enhanced services, and growing base numbers have caused the academic information resource market (or the total procurement funds libraries should pay) to continuously expand over the past fifteen years. However, no industry can grow indefinitely; when any growth curve reaches its inflection point without "disruptive innovation" [8], it will rapidly shrink or even experience market collapse (i.e., industry crisis). Consequently, the price increases by some large integrated content providers

and the library community' s joint resistance have become focal contradictions in recent years [9]. On the surface, this reflects industry development reaching an oligopolistic stage after years of vertical integration and horizontal acquisitions; beneath the surface, it reveals mismatched industry competition 萎缩 and innovation stagnation with manufacturers' demands for high returns.

Analyzing Emerging Growth Points of Academic Information Resources Through Industrial Innovation Theory

As previously mentioned, in a digital, networked, and open environment, intermediate process operating costs have substantially decreased. For instance, publishers and publishing houses have reduced communication and typesetting expenses, while publishing houses have saved on physical assembly and distribution costs, as well as agent transportation fees. In reality, the only actual cost increases have been in journal titles and quantities, cumulative knowledge assets, and the stable growth base of database system development, maintenance, and promotion. This represents not merely a decline in unit costs, but more importantly, the first major transformation in the academic information resource exchange system: changes in industrial production factors.

Second, the emergence of search engines has significantly impacted readers' knowledge acquisition habits and methods. Although search engines cannot cover all academic information resources—particularly specialized, highly targeted, and high unit-cost resources—and their indexing of Learning Objects remains incomplete, they have facilitated the widespread dissemination of general knowledge, bringing about a second transformation: alternative consumption choices (users spending time on other knowledge acquisition channels) have increased.

Third, the rise of the Open Access (OA) movement and the Open Archives Initiative (OAI) [10] means that while libraries still need to provide readers with knowledge access services, they no longer rely exclusively on traditional supply channels constructed by publishing houses, publishers, integrators, and agents. Libraries and information institutions can instead depend on institutional repositories and their alliances to provide knowledge access services to both internal researchers and external public audiences, following specialized knowledge management processes (development and application of institutional repositories). This represents the third transformation: partial migration of the industrial supply chain (knowledge acquisition mechanism).

Fourth, research competition pressures have created outcome evaluation demands: first, citation frequency and quality in literature carriers; second, shortened transfer processes between research, technology, application, and education. Moreover, for Chinese scientific research under traditional journal subscription models, researchers must passively wait for the latest research findings to undergo publishing, integration, distribution, and circulation (or pre-publishing and classified access) processes, which in a digital and networked environment

actually hinder the speed of latest research communication and reduce efficiency across the research system' s absorption, mastery, transformation, and innovation chains. Therefore, open academic information resources represent a crucial trend: first, increasing publication platforms and access efficiency; second, enabling accurate delivery of results to primary audiences; third, accelerating publishing and circulation speed; fourth, saving circulation costs while enhancing peer review support; and fifth, facilitating engagement with global peer communities. Since new-generation scientific innovation exhibits a hybrid phenomenon of knowledge resource production and consumption entities, open academic resources have become the main driver for developing the academic communication system (receive-utilize-publish). The fourth transformation carries the greatest impact: fundamental changes in demand elements.

Overall, despite continued expansion in the total industry scale of literature resources driven by scientific progress and interdisciplinary differentiation, the issue is not who dominates (essentially no single entity can dominate), but rather the need to collectively implement "disruptive innovation" measures under development patterns including changing literature unit price structures, increasing alternative knowledge acquisition channels, massive migration of knowledge acquisition mechanisms, and fundamental changes in knowledge acquisition demand elements. This involves how governments guide development, how major academic institutions advance relevant measures, what changes international publishing institutions have undergone, what practical challenges libraries face as knowledge acquisition assurance mechanisms, and how to support new knowledge acquisition mechanisms—a series of cutting-edge issues.

Opportunities for Open Academic Information Resources: Analysis of Major Countries' Information Policies

From these industry patterns, we can understand why major scientific and technological nations have implemented a series of policies and measures to guide the healthy development of open academic information resources. Currently, open academic information resources, particularly open access methods, can be divided into Green OA (open deposit) and Golden OA (open publishing) [11]. Green OA requires publishers to make research papers openly accessible within an approved embargo period, including allowing authors' institutions to store and openly share them. Golden OA, conversely, involves immediate open publishing of research results, enabling full-text immediate open access.

Policy promotion begins with requiring open sharing of publicly funded research to ensure the legality and rationality of open deposit. For example, the U.S. White House Office of Science and Technology Policy, since December 2010 and in accordance with the America COMPETES Reauthorization Act of 2010, organized public consultation on long-term preservation and public access to federally funded research results [12]. Based on extensive opinion gathering, the U.S. Congress held a scholarly publishing roundtable in October 2010, proposing eight recommendations: (1) institutions should thoroughly research and

openly consult with stakeholders and the White House Office of Science and Technology Policy to develop public access policies; (2) institutions should establish clear embargo periods between formal publication and public access; (3) policies should prioritize interoperability requirements; (4) every effort should be made to provide free access to archived versions; (5) government agencies should expand their access policies' applicability through resource collaboration with non-government stakeholders; (6) policies should promote innovation in academic journals' research and educational functions; (7) government public access policies should address long-term digital preservation; and (8) the White House Office of Science and Technology Policy should establish a public access advisory committee [13]. The 2011 roundtable agenda included: (1) how to protect stakeholders' intellectual property rights, including scientists, publishers, and federal agencies; (2) whether to use centralized or distributed storage for research results and how to ensure government long-term preservation and management; (3) enhancing search, discovery, and analytical capabilities across disciplines based on stored and open research results; (4) how the federal government can invest in scientific research to maximize benefits for U.S. taxpayers from open access policies while minimizing stakeholder costs; (5) whether other types of funded results beyond academic journal articles should be covered; and (6) how to set reasonable open embargo periods [14].

On February 12, 2012, U.S. Congress members submitted the Federal Research Public Access Act (FRPAA) to both houses (H.R.4004, S.2096). The bill primarily required 11 federal agencies with annual external research funding exceeding $100 million to adopt policies similar to the NIH (National Institutes of Health). Key provisions included: (1) research papers resulting from federally funded research must have their electronic final manuscripts submitted to federal agencies after acceptance by peer-reviewed journals; (2) if publishers agree, the final published version may replace the final manuscript; (3) peer-reviewed final manuscripts should be made freely available online as quickly as possible, but no later than six months after formal publication [15].

David Willetts, UK Minister for Universities and Science, stated at the UK Publishers Association annual meeting in May 2012 that the public needs more freely accessible research materials, better organized and revealed, requiring government and publishing collaboration to advance open sharing of publicly funded research. He cited a 2012 U.S. Committee for Economic Development report showing that one year after implementing the NIH open access policy (launched in 2008), scientific development accelerated, basic research commercialization increased, subsequent research and citations multiplied, and duplicate research decreased, thereby improving the U.S. government' s return on research investment [16-17]. Additionally, the UK Research Councils (RCUK), after releasing an open access position statement in 2006, issued a revised open access policy in March 2012. Key elements included: (1) peer-reviewed papers from RCUK-funded or partially funded research must be published in journals compliant with RCUK open access policy; (2) open publishing of funded research papers is encouraged, with open access required within at least six months after publi-

cation (AHRC and ESRC-funded papers within twelve months, though AHRC and ESRC are working to reduce all papers' embargo periods to six months); (3) open access should include unrestricted use of manual and automated text-mining tools; and (4) unlimited content reuse is permitted under proper citation [18].

Since 2008, the EU FP7 program has allowed project funds to pay open access article processing charges and launched open deposit pilots in seven fields: health, energy, environment, information and communication technology, basic research facilities, social and economic research, and humanities. OpenAIRE, funded by FP7 and established for 33 European countries to build an institutional repository network, proposed on June 11, 2012, "Large-scale deposit in repositories increases access and use," exploring multiple open access support services for publishing and academic information exchange [19].

Robert-Jan Smits, Director-General of the European Commission' s Research and Innovation Directorate, stated regarding the EU' s November 2011 "Horizon 2020" plan that the program supports dissemination, communication, and dialogue activities. The open access norms piloted in seven FP7 fields will be expanded across all research areas in "Horizon 2020," becoming mandatory requirements for all funded research. To this end, the EU will invest €80 billion in research funding, with provisions in grant contracts requiring research papers to be openly accessible within several months or one year [20].

Furthermore, ALLEuropeanAcademies (ALLEA) issued the 21st Century Open Science Declaration in April 2012, calling for: (1) urging funding agencies, including the EU, to improve open science principles for publications, research data, software, educational resources, and research infrastructure; (2) encouraging national scientific and research institutions and support industries to innovate and enhance open science platforms, making research results discoverable and reusable, interacting with publishers, libraries, and institutional repositories, and exploring new business models for open scientific data management and customer service development; (3) involving scientists, educators, and students in continuous dialogue about the necessity of embracing open science culture and implementing reward mechanisms; (4) communicating with regional, national, and European decision-makers to mobilize them to establish and expand first-class infrastructure for free, secure, and sustained access and reuse of as many documents and datasets as possible; and (5) cooperating with global networks and other scientific institutions to establish worldwide interoperable data centers [21].

These policies from major international research powers demonstrate that the policy system for open academic information resources is gradually being implemented and normatively guided.

Opportunities for Open Academic Information Resources: Analysis of Important Academic Institutions

An increasing number of major research and educational institutions have formulated their own open deposit policies. Institutional open access policies include: (1) the North American Top 30 Universities Open Access Policy Alliance; (2) the U.S. Open Access Publishing Fund Alliance of nearly 20 universities; and (3) the UK Open Access Implementation Group for higher education institutions.

Led by Harvard University, Stanford University, Duke University, Caltech, and UC Berkeley, 22 top North American universities have established faculty open access policies requiring faculty to retain copyright when publishing papers and deposit them in institutional repositories for open access. These universities formed the Coalition of Open Access Policy Institutions to aggregate and enhance open access policy impact and promote positive changes in scholarly publishing markets [22].

Led by Harvard University, Cornell University, and MIT, 16 universities established the Compact for Open Access Publishing Equity, committing to establish permanent funds to support faculty publishing in open access journals [23].

In the UK, multiple universities jointly formed the UK Open Access Implementation Group to help higher education institutions implement open access support policies [24].

Currently, open access movements at important academic institutions focus on Green OA, i.e., open deposit systems, making open access policies and institutional repositories crucial measures supporting open academic information resources. This also correlates with increasingly positive attitudes among researchers, research institutions, and research funders [11]. According to the EU SOAP project' s survey of over 38,000 researchers, 89% agreed that "scientific research would benefit from open access journals," while 85% agreed that "publicly funded research results should be openly shared" [25]; the European Association for Cancer Research survey showed 88% of members agreed that "publicly funded research results should be openly shared" [26]; and the EU "Scientific Information in the Digital Age" project survey found 90% of researchers supported "open sharing of publicly funded research publications as a principle" [27].

According to the Directory of Open Access Repositories (DOAR) statistics, as of May 2012, the number of institutional repositories worldwide exceeded 2,162 (compared to 2,150 in January 2012), with annual growth exceeding 30% [28]. Regarding paper volume and usage data in institutional repositories, PubMed-Central stored 2.3 million papers by the end of 2011, covering biomedical content [29]; arXiv.org stored over 729,000 preprints [30]; and the economics open access repository RePEC stored approximately 1.135 million preprints and papers, with total downloads reaching 6.2 million since 1998 and 580,000 downloads in December 2011 alone [31]. In China, the Chinese Academy of Sciences launched

institutional repository construction in 2008, and by 2011, 76 institutional repositories were operational, containing 1.25 million full-text papers with 570,000 downloads in 2011.

Currently, supporting open academic resources involves either depositing papers in institutional repositories for open access or directly self-publishing preprints or reports in institutional repositories. Beyond Green OA, Golden OA is also gradually developing.

Opportunities for Open Academic Information Resources: Analysis of International Publishing Institutions

Open access journals and papers show strong growth trends. According to the Directory of Open Access Journals (DOAJ), as of May 2012, there were 7,745 quality-controlled academic open access journals (compared to 7,522 in February 2012) [32]. SOAP research on open access journal growth rates shows that between 1993-2009, open access journals grew at 18% annually, while open access papers grew at 30% annually (including papers stored in open access repositories) [33], with open access papers accounting for 8-10% of global academic paper output [34], demonstrating strong and clear growth momentum.

Concurrent with open access journal growth, their impact is gradually becoming evident, with increasing numbers of open access journals being indexed in major citation indexes. shows the number of open access journals indexed in the Journal Citation Reports (JCR); 1,365 open access journals receive ScimagoJR rankings [35] (an impact factor-like evaluation metric assigned by the Scimago Journal Ranking system to influential journals [36]).

Two trends currently exist: first, commercial publishers developing open academic information resources; second, researchers and scientific communities establishing open academic information resources.

The EU-funded project "Publishing and the Ecology of European Research (PEER)" studied the impact of mandatory open deposit policies on publishers from both download and subscription perspectives. Project participants included funders, libraries, publishers, and institutional repositories. In May 2012, findings indicated that mandatory open deposit policies negatively impacted publishers, but evidence showed that open deposit increased total paper usage and actually promoted publisher website usage [41].

Commercial publishers have recognized open access journals as a reliable business model, with numerous commercial publishers actively entering open access journal publishing. Statistics show that in 2011, 530 scholarly society publishers published 616 open access journals, compared to only 425 publishers publishing 450 open access journals in 2007 [42]. Examples include Springer's SpringerOpen series [43], Wiley and Blackwell' s Wiley Open Access series [44], Taylor & Francis' s Taylor & Francis Open Journals series [45], and Elsevier' s open access journal International Journal of Surgery Case Reports [46].

On the other hand, a 2010 meeting of top scientists at the Howard Hughes Medical Institute (HHMI) formed the consensus that "we need academic publishing models better suited to research community needs," prompting HHMI, the Max Planck Society, and the Wellcome Trust to announce in June 2011 their collaboration to launch eLife, a top-tier open access journal in biomedicine and life sciences. Aimed at attracting and publishing the best research in relevant fields, eLife is led by Executive Director Dr. Mark N. Patterson (former PLoS editor-in-chief) with an editorial team comprising internationally renowned and active researchers from Europe, North America, and Asia [47].

From the development trends in international publishing and major academic institutions, the trend toward "open publishing + open institutional repositories = mainstream academic information resources" is becoming increasingly evident. Data also show that open access journal quality is improving. The key issue now is how libraries can further support open academic information resources, particularly since Green OA policies have achieved considerable success while Golden OA progress remains relatively slow—what considerations should the library community address? These questions merit further exploration and analysis to comprehensively advance open academic information resource development.

Challenges for Open Academic Information Resources: Analysis of Chinese Library Practical Work

The goal of library literature resource construction is to provide users with needed information when required—not merely an information service task, but proactive action to guarantee knowledge access. Therefore, the essence of literature procurement funds is payment for knowledge acquisition rights, not physical materials (like parchment or paper). In the networked, digital, and open era, library expenditure is more profoundly about funding research knowledge support capabilities.

With digital information resource development, libraries have allocated substantial funds to database subscriptions, increasingly improving immediate and effective information services in networked digital environments. Notably, database subscription fees do not confer ownership of physical objects, but rather network usage rights to databases. In the context of academic information exchange systems, this actually represents purchasing and possessing knowledge access rights. Thus, database subscription fees have already become knowledge acquisition fees.

As user needs evolve in the cooperative sharing era, literature funds have also changed, expanding from traditional literature subscription fees to include document delivery subsidy fees. In essence, knowledge acquisition fees, or literature acquisition fees, should encompass a series of cost components including literature subscription fees, document delivery subsidies, bibliographic data exchange fees, and online system maintenance fees. Organizations such as NSTL, NSL, OCLC, and CISTI all need to pay corresponding reasonable knowledge acquisi-

tion fees for digital and networked literature sharing services.

In the open access era, literature funds have expanded into various "knowledge acquisition assurance" mechanisms to adapt to digital, networked, and open trends and researchers' information needs. As previously mentioned, leading institutions like Harvard University, Columbia University, and MIT have launched open access publishing support funds because the open publishing model offers five advantages: (1) promoting timely and widespread knowledge dissemination without traditional channel and circulation restrictions; (2) enabling direct conversion from existing high-level journals to guarantee paper quality while increasing utilization opportunities; (3) implementing collective payment mechanisms to ensure sustainable journal resource development while reducing individual subscription burdens; (4) establishing institutional repository alliances to facilitate content preservation and utilization, particularly through more effective knowledge management mechanisms; and (5) enabling group purchasing to control prices and maintain optimal price balance between supply and demand.

Libraries'considerations regarding open publishing and open deposit impacts primarily involve five dimensions (as shown in): whether they can guarantee paper quality (academic quality), support journal sustainable development (economic support strength), promote broad and timely dissemination (openness level), facilitate content preservation and utilization (content control level), and ensure market fairness and reasonableness (price control and growth).

Regarding open publishing' s impact on paper quality (as shown in), individual author payment methods have no influence on journal paper quality control under any publishing model, while institutional or research funder payments can maintain certain influence. However, alliance payment for new journals offers the strongest quality guidance advantage.

Regarding open publishing' s support for journal operations (as shown in), individual author payment is clearly weaker than institutional or funder payments. Table 4 shows that alliance payment provides strong support strength for new journals, converted journals, or hybrid open access journals.

Regarding copyright control over journal works (as shown in), author payment methods have no negotiating position and remain weak; institutions may have greater influence but still lack negotiation advantages; national research funders possess stronger negotiating power (though small-scale regional funders remain weak); only transnational alliance payment methods hold absolute advantage in negotiating copyright for works in three types of open journals.

Regarding open publishing' s impact on journal price control (as shown in), alliance payment methods can effectively curb wanton price increases, achieving optimal price balance between supply and demand. Funders also possess certain bargaining chips and capabilities, while authors and institutions remain relatively weak.

In summary, open publishing presents many challenges to information resource

service models, including whether the library community can unite to jointly struggle for Chinese readers' knowledge acquisition rights and achieve collective strength. On the other hand, through gradual analysis, people can also recognize the opportunities open academic information resources bring to libraries. If achieved through alliance cooperation, there are at least four additional outcomes. First, libraries can organize knowledge open publishing from upstream in the industrial chain, promoting knowledge dissemination; in this sense, libraries are no longer just building information resources but organizing information dissemination, expanding their positive role and performance in building an information society. Second, the library community has long strived for full rights to knowledge content and its flexible utilization; through open academic information resources, libraries can enter the stage of "full-spectrum organization of knowledge dissemination (publishing, acquisition, preservation, reuse, etc.)," laying a good foundation for promoting full and sustainable knowledge utilization. Third, through group organization of knowledge dissemination, the library community can lead the academic communication environment and return to a dominant position in the information exchange environment, 争取 ing broader and more reasonable space for the intellectual property rights 主导权 lost by the scientific community. Fourth, representing institutions in organizing knowledge dissemination enables libraries to actively play the role of Chief Knowledge Officer (CKO), effectively participating in relevant policy formulation and resource utilization organization. At this moment, if the library community does nothing, it will be regarded as powerless, thus losing opportunities to actively participate in the information infrastructure of an innovative society.

Working Together for Chinese Readers' Knowledge Acquisition Rights

Researchers need more freely accessible research materials, and library and information institutions need to better organize and rank them. The challenge lies in whether alternative solutions to current academic information resources exist. This includes challenges to publishing houses, publishers, integrators, libraries, research project funding agencies, and relevant government institutions, as well as opportunities and responsibilities regarding intellectual property, copyright, open access, digital technology, and other aspects.

As David Willetts noted, "…an independent researcher unaffiliated with any institution enrolled in night school to use library resources but never attended classes, because night school tuition was far cheaper than purchasing the papers he needed to read; small businesses often hire university students to print and download research papers from university libraries…" These situations are not unfamiliar from personal experience. At this moment, it is time to integrate procurement and publishing fees to comprehensively guarantee knowledge acquisition. As previously discussed, the goal of library literature resource construction is to provide users with needed information when required, essentially paying knowledge acquisition fees rather than for physical materials. In the net-

worked, digital, and open era, library expenditures are more profoundly about research knowledge support capability fees.

Commercial academic publishing indeed creates added value, not only by mastering the core peer review process of academic communication systems but also by pre-sorting literature and organizing data for subsequent reader services. However, attempting to retain original profit models contradicts industry development cycle laws and runs counter to evolving research needs. While abandoning existing business models and service mechanisms is unrealistic, it cannot address the growing and changing reader demands. In a networked, digital, and open environment, developing new payment and service models cannot stagnate.

The academic information resource supply and demand system stands at an inflection point. When "anti-science, anti-communication" elements exist in academic information exchange systems, mechanisms run counter to fundamental goals, creating favorable conditions for "innovation that breaks existing structures and drives new development." The library community has begun allying and promoting open access; researchers and communities have started actively participating in open deposit and open publishing; independent legal entities have begun promoting open academic resource construction services; and manufacturers have begun facing strategic choices to support open access, with even national information policies intervening in industry development. These developments will lead to industrial structure transformation—for better or worse. Early warning and active experimentation with various solutions can accumulate experience to avoid confusion when sudden transformation occurs.

Libraries have always been organic components of the entire knowledge exchange system, whose primary function is ensuring the normal operation of academic communication and publishing systems so publications can reach the broadest readership through economical and reliable means, making library procurement funds an organic and inseparable part of publishing funds. However, in the networked, digital, and open era, the traditional publishing mechanism's knowledge acquisition assurance increasingly reveals its irrationality and inefficiency, particularly the "double payment" problem: paying both from the research end for content production and quality control, and from the acquisition end to repurchase content. There is also a "double organization" problem: content organization by publishing houses followed by reorganization by libraries. Under normal reasonable circumstances, manufacturers deserve reasonable profits through innovative services and business operations. However, after years of integration forming oligopolistic dominance, practices that maintain high prices through access restrictions, seek excessive profits through usage limitations, and deprive technological progress' s economic and dissemination dividends through content control have created an industry crisis.

At this moment, integrating procurement and publishing fees to comprehensively guarantee knowledge acquisition is timely. Libraries have tirelessly supported academic information resource development and will continue to encourage it.

However, we must clearly recognize that researcher needs are changing, innovative society information needs are increasing, and even international library community payment methods are transforming. Libraries' primary goal in promoting open academic information resources is optimizing overall support capacity: maximizing acquisition ability (open access), utilization ability (open use), market development leadership (open publishing), and economic benefits (avoiding double payment and organizational barriers to dissemination and utilization) without affecting knowledge production quality. This disruptive innovation represents concrete practice contributing to harmonious economic and social development supporting innovative society, strengthening the knowledge foundation of information society, and safeguarding Chinese readers' knowledge acquisition rights.

Tossing bricks to attract jade—this is the purpose of this paper.

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