
AI translation · View original & related papers at
chinaxiv.org/items/chinaxiv-201710.00011

An Analysis of Database Supply-Side Reform Based on the Belt and Road Initiative

Authors: Zhang Liying

Date: 2017-10-16T00:00:00+00:00

Abstract

[Purpose/Significance] Significant contradictions exist between the supply and demand sides of databases, urgently necessitating breakthroughs through supply-side reform. [Method/Process] This paper, based on elaborating three major contradictions between database supply and demand sides, introduces the main theme and connotation of the “Belt and Road” initiative, clarifies domestic misconceptions regarding database reform, and proposes specific pathways for structural reform on the database supply side by integrating the five tasks of supply-side reform: “three cuts, one reduction, and one supplement” . [Results/Conclusion] Supply-side reform represents a proactive choice for data suppliers to adapt to the new international situation. Database supply-side reform constitutes a strategic game between supply and demand sides, with win-win cooperation serving as the main theme of this game.

Full Text

An Analysis of Database Supply-Side Reform Based on the Belt and Road Initiative

Abstract: [Purpose/Significance] A clear contradiction exists between database supply and demand, urgently requiring supply-side reform to break the impasse. [Method/Process] This paper first elaborates on three major contradictions between database suppliers and users, then introduces the core tenets and connotations of the Belt and Road Initiative to clarify common misconceptions about database reform among Chinese stakeholders. Drawing on the five supply-side reform tasks of “reducing overcapacity, destocking, deleveraging, lowering costs, and filling gaps,” it proposes specific pathways for structural reform on the database supply side. [Result/Conclusion] Supply-side reform represents a proactive choice for database providers to adapt to new international circumstances. Database supply-side reform constitutes a game

between supply and demand sides, with win-win cooperation as its central theme.

Keywords: Belt and Road Initiative; supply-side reform; database; win-win cooperation

Chinese Library Classification: G250

Citation Format: Zhang Li-Ying. An Analysis of Database Supply-Side Reform Based on the Belt and Road Initiative[J].

Issues surrounding databases almost invariably spark intense academic debate when a major price hike occurs, yet these discussions quickly cool down, settling into the same old pattern—calm and uneventful. Databases continue to raise prices as before, and libraries continue to purchase as before. The obvious contradiction between database supply and demand urgently requires supply-side reform to break this stalemate. From May 14-15, 2017, the Belt and Road Forum for International Cooperation was held in Beijing, earning high praise from the international community. Seizing the opportunity presented by the Belt and Road Initiative and supply-side reform, this paper explores specific pathways for database provider reform from five perspectives: reducing overcapacity, destocking, deleveraging, lowering costs, and filling gaps.

1 Escalating Supply-Demand Contradictions Urgently Require Reform

First, pricing remains the most controversial issue between database suppliers and users. Databases raise prices unilaterally, with even prestigious institutions like Harvard University claiming that database prices are unsustainable [1], leading to frequent academic and library boycotts against malicious price increases [2,3]. From the demand side, research and educational institutions operate as public welfare entities primarily funded by government appropriations without their own revenue streams, making it difficult to cope with annual, substantial price hikes. They argue that price increases are not inherently unacceptable, but must follow rules [4] and demonstrate reasonable justification. From the supply side, database providers are commercial companies with costs and products that hold value and lack substitutes, naturally giving sellers greater bargaining power [5]. Pursuing profit is perfectly legitimate, as profitability fully motivates investment enthusiasm among database producers. With each side holding firm to its position, contradictions continue to escalate.

Second, sales models represent another focal point of conflict. Beyond the bundled sales model widely discussed domestically, the Demand-Driven Acquisitions/Patron-Driven Acquisition (DDA/PDA) model, popular abroad and hereafter referred to as DDA, is currently facing bottlenecks. While some foreign librarians view DDA as a stable e-book procurement model, publishers still consider it experimental. Some publishers, acting from self-interest, have begun implementing embargoes on new titles, raising Short-Term Loan (STL) fees, or even withdrawing from DDA entirely [6]. The result is that

libraries cannot acquire new books, and readers cannot access the latest scientific developments and research progress in a timely manner. Over time, database providers lack profit-driven incentives while readers struggle to obtain cutting-edge scientific information, hindering academic communication and social development.

Third, open access also generates considerable controversy. As academic journal prices continue to soar, the scientific community has proposed the “open access” concept to address the global “journal crisis.” Open access not only counteracts the “knowledge monopoly” of commercial publishers but also attempts to break the long-standing monopoly of scientific knowledge by elite groups [7], enabling ordinary citizens to access the latest research findings. As a new form of academic communication, open access resources have quickly gained attention and favor from libraries and academia due to their advantage of free availability. Libraries and academic communities actively support and promote open access, leading to the emergence of preprint platforms like arXiv and ChinaXiv, institutional repositories (IR), and sharing platforms like ResearchGate. In contrast, database providers have adopted an ambiguous stance. To lock in existing profits, some publishers frequently hinder open access development by charging high Article Processing Charges (APC) or extending embargo periods.

2 Silk Road Spirit Resonates: Win-Win Cooperation Becomes Consensus

In 2013, Chinese President Xi Jinping proposed the important cooperative initiative of jointly building the Silk Road Economic Belt and the 21st-Century Maritime Silk Road. Over the past three years, Belt and Road construction has progressed smoothly with fruitful results. The Silk Road spirit, centered on “peaceful cooperation, openness and inclusiveness, mutual learning and mutual benefit,” has awakened historical resonance among all countries. The Belt and Road Initiative will actively advance supply-side structural reform, thoroughly implement the development concepts of innovation, coordination, green development, openness, and sharing, focus on resolving development imbalances and digital divides, and create a new model of win-win cooperation [8]. During and before the forum, governments, localities, and enterprises from various countries reached a series of cooperative consensuses, producing over 270 concrete outcomes. The Belt and Road Initiative will provide a foundation and impetus for the healthy development of a new type of globalization.

Databases serve as the bond of knowledge dissemination. Promoting database supply-side reform and facilitating supply-demand linkage and cooperation can not only drive database provider development but also accelerate academic research communication and dissemination, thereby achieving a new win-win situation.

3 Misconceptions Among Chinese Stakeholders: Effectiveness Requires Supply-Demand Coordination

Professor Cheng Huanwen’s “Ten Questions for Database Providers” reflects the library community’s dissatisfaction and complaints toward database providers. Behind each complaint lies an unmet need. Structural reform on the database supply side has become imperative. Current domestic discussions that focus only on the supply side and equate database supply-side reform with database provider reform are one-sided. China’s library community and academia appear hesitant and reluctant to cooperate with digital publishing reforms. For instance, to date, China’s knowledge and scientific communities, including scholars and researchers, have been accused of lacking motivation and maintaining an ambiguous attitude toward open access [7]. Meanwhile, domestic libraries have shown little enthusiasm for new procurement models like DDA and STL, citing reasons such as “domestic funding basically cannot be used for short-term loans” and “leadership believes reader recommendations should purchase permanent access rights” —a wait-and-see approach that appears unwise.

Database supply-side reform resembles a game in which both sides want to emerge as winners. Non-participation eliminates any chance of winning, while participation does not guarantee loss. Reform outcomes remain uncertain for database providers, who, as commercially responsible companies, face greater challenges and risks. Supply and demand are bidirectional, interdependent, and mutually constraining. Database supply-side reform requires efforts from both supply and demand sides to address both symptoms and root causes. As the primary demand-side stakeholders, libraries and academia should actively participate in reform; only through supply-demand coordination can results be achieved.

4.1 Improving Quality and Efficiency in Digital Publishing Systems: On Filling Gaps, Reducing Overcapacity, and Destocking

The key to database supply-side reform lies in resolving supply-demand contradictions, enhancing database providers’ supply capacity, and establishing a long-term mechanism for effective digital publishing supply. According to demand-side requirements for supply system quality and efficiency, database supply-side reform must promote structural adjustment and optimization. On one hand, database providers must vigorously adjust existing stock structures by destocking and reducing overcapacity, eliminating ineffective and excess capacity, expanding effective supply, and improving the adaptability and flexibility of database supply structures to demand changes. On the other hand, they should actively promote digital publishing industry upgrading and optimization, market-demand-oriented, fill gaps in market supply, and further improve the institutional mechanism where the market determines resource allocation.

4.1.1 Filling Gaps

China's primary gap in digital publishing is the lack of high-quality manuscript sources. The current domestic science and technology evaluation system and orientation cause a massive outflow of excellent manuscripts, making it difficult for domestic journals to secure good contributions and severely hindering the development of Chinese scientific journals. Addressing this gap requires supply-side reform along two dimensions: first, establishing a reasonable scientific research evaluation system. The outflow of manuscripts primarily stems from domestic research institutions' over-reliance on single SCI metrics in their assessment systems, with some even implementing reward policies that reinforce this orientation. In fact, developed countries employ comprehensive indicators to evaluate research outcomes, with peer-review-based qualitative assessment being more important than quantitative metrics. A reasonable evaluation system should overcome the shortcomings of quantitative assessment while organically integrating qualitative evaluation. Second, reshaping a meticulous culture to cultivate "craftsmanship spirit." Cell Research (CR), supervised by the Chinese Academy of Sciences, has seen its impact factor grow geometrically to 14.812 [9], creating a myth among Chinese journals. CR's success lies in its editorial team's outstanding creative spirit, pursuit of excellence, and user-centered service spirit—in other words, its "craftsmanship spirit."

While foreign databases develop rapidly without manuscript source problems, they have gaps in other areas. For instance, the DDA model mentioned earlier is encountering development bottlenecks. To address existing DDA problems, ProQuest has officially launched a new Demand-Driven Acquisitions e-book model called "Access-to-Own" (ATO), attempting to coordinate and balance the interests of supply and demand stakeholders in DDA models. ATO's permanent buyout price is 110% of the original book price (for new titles) or 105% (for older editions), designed to compensate publishers' interests, while libraries can obtain new titles through ATO that PDA models cannot provide, achieving win-win through compromise. Currently, many foreign publishers and libraries have decided to join or are considering this model [10,11]. The ATO model subverts our traditional understanding of database sales models—not all sales models tilt toward database providers' interests. Once database supply-side stakeholders cannot achieve profitability, demand-side interests will suffer corresponding damage. Only through mutual benefit and win-win cooperation can the academic communication system be sustainable.

4.1.2 Reducing Overcapacity and Destocking

"Reducing overcapacity and destocking" essentially means market clearing on the supply side—in simple terms, supply-demand balance. Resolving existing ineffective capacity and inventory cannot rely entirely on supply-side self-adjustment without market demand; it also requires demand-side expansion. The two are interdependent. In the long run, stopping the production of new ineffective capacity through reform requires adhering to market-oriented supply and avoiding

the trap of “supply creates demand” [12].

Currently, several major domestic academic journal digital resource databases provide comprehensive digital information with low specialization and highly overlapping content [13]. Additionally, many domestic journals feature repetitive content, similar topics, and lack innovative works, showing homogenization tendencies and a “thousand journals, one face” phenomenon. China’s academic evaluation system further generates massive amounts of “title-driven publications” and “degree-driven publications”—academic garbage and paper bubbles. Some database providers indiscriminately scan print resources regardless of quality, creating large volumes of low-end, excess, and ineffective capacity. Many foreign database providers’ bundled print products also constitute a form of ineffective supply-side capacity. The Belt and Road Initiative advocates green, low-carbon production and lifestyles. Market clearing in the database sector requires government guidance through reshaping academic evaluation systems, but ultimately depends on supply-side market adjustment. Database providers should pursue quality and efficiency improvements, adopt new systems and development models for on-demand publishing, and resolutely eliminate capacity that does not meet market demand.

In a buyer’s market, buyers possess greater bargaining power, potentially creating “virtual inventory” for databases. Virtual inventory lacks physical carriers, occupies no space, involves no stockpiling risks, and faces no expiration issues. However, the rapid widespread adoption of ResearchGate and the Sci-Hub piracy website among academics amounts to a ticking time bomb for database providers. Additionally, issues like copyright disputes, peer competition, and integrator exploitation make life difficult for small database providers [14]. The costs and energy required for protracted battles are not something every provider can afford. The Belt and Road Initiative advocates resolving digital divides and creating new win-win cooperation models. Database providers’ destocking requires demand-side digestion of “inventory” through price reductions and expanded demand scope. The National Library provides free remote access to over 170 databases for national readers, including three foreign-language databases with nationwide authorization [15]. In 2015, the Digital Resource Acquisition Alliance (DRAA) of university libraries collectively introduced 136 foreign databases [16], while the Chinese Academy of Sciences organized group purchases of 109 databases. Group procurement, national procurement [17], and even global procurement [18] are becoming new trends in database acquisition models. Database providers should seize this opportunity, actively construct high-level dialogue and exchange mechanisms, promote various types of group purchasing, and capture new market opportunities.

4.2 Stimulating Database Provider Vitality in Reform: On Deleveraging and Cost Reduction

Following the global economic crisis, Thomson Reuters’ financial situation became unsustainable, ultimately choosing to sell its Intellectual Property & Sci-

ence business, including SCI, for \$3.55 billion [19]. This business accounted for approximately 8% of the company' s total 2014 revenue. Losing these businesses had minimal impact on Thomson Reuters' overall development; instead, it helped the group pay off debts and obtain substantial funds for new business investment. However, this “cutting flesh to stop bleeding” approach clearly does not suit other database providers whose primary business is digital publishing. Facing the booming development of digital video, The New York Times hopes to reach younger audiences through video, forming a content alliance with the crowdfunding website Kickstarter that saves considerable development time and costs [20], successfully achieving a new model of mutually beneficial media cooperation. The Belt and Road Initiative creates new win-win cooperation models, and using crowdfunding to promote financing represents a disruptive new business model. According to supply-side economics, “deleveraging” and “cost reduction” can stimulate enterprise vitality, reduce burdens, and fully mobilize enthusiasm and initiative for effective supply.

Simply put, “leveraging” uses less capital to obtain high returns. When capital markets are favorable, the high returns from this model often make people overlook inherent high risks. “Deleveraging” addresses excessively high corporate financial debt. “Cost reduction” constitutes an extremely important component of database supply-side reform, not only effectively alleviating difficulties for real-economy enterprises but also promoting enterprise transformation and upgrading, which is significant for enhancing sustainable development. Innovation serves as an important force driving development, and Belt and Road construction itself represents an initiative that emphasizes focusing on innovation. Database supply-side reform requires database providers to implement innovation-driven strategies, activate new development momentum, strengthen technological and internal management innovation, make comprehensive arrangements for reducing enterprise costs across all aspects, and effectively implement these measures.

From an international perspective, there are already signs of library procurement funds shifting toward open publishing support funds [21]. Open publishing presents both opportunities and challenges for database providers. Actively promoting open publishing and open access is not “digging their own grave” but rather continuously expanding demand scope. This aligns with China' s current advocacy of “mass entrepreneurship and innovation.” Through Belt and Road expansion of international cooperation, database providers' promotion of open publishing can not only help libraries overcome the global “journal crisis” but also reduce providers' upfront investment and avoid risks associated with traditional publishing models that deviate from market demand.

Supply-side reform represents a proactive choice for database providers to adapt to new international circumstances. Database supply-side reform constitutes a game between supply and demand sides, with win-win cooperation as its central theme. Resolving database supply-demand contradictions requires actively promoting structural reform on the database supply side, improving the adapt-

ability of database supply structures to demand structures, and constructing a supply-demand win-win cooperation model, thereby promoting cultural and scientific exchange and driving social development.

- References:** [1] SAMPLE I., Harvard University says it can't afford journal publishers' prices[EB/OL]. [2017-06-12]. <https://www.theguardian.com/science/2012/apr/24/harvard-university-journal-publishers-prices>.
- [2] Qin Ke. Self-Salvation of Libraries in the Game with Database Publishers[J]. Library Tribune, 2015, (08): 62-68.
- [3] Zhao Yan, Lu Ning, Zheng Jiancheng, et al. Analysis and Enlightenment of Foreign Libraries' Strategies for Dealing with Financial Crisis and Supplier Price Increases[J]. Library and Information Service, 2012, v.56;No.450(05): 78-83.
- [4] Cheng Huanwen. Ten Questions for Database Providers!![M]//Cheng Huanwen, Liu Honghui, Liu Hong. Cheng Huanwen's Questions: Why Are Database Providers So Aggressive. Beijing: National Library of China Publishing House, 2016:3-4.
- [5] Jiang Jun. Database Providers: Raising Prices Every Year; Libraries: Complaining While Buying[M]//Cheng Huanwen, Liu Honghui, Liu Hong. Cheng Huanwen's Questions: Why Are Database Providers So Aggressive. Beijing: National Library of China Publishing House, 2016:201-213.
- [6] BUCK T H, HILLS S K. Diminishing Short-Term Loan Returns: A Four-Year View of the Impact of Demand-Driven Acquisitions on Collection Development at a Small Academic Library[J]. Library Resources & Technical Services, 2016, 61(1): 51-56.
- [7] Wang Le. Open Access Addresses Journal Crisis[N/OL]. Wenhui Daily, 2010-10-12[2017-06-12]. <http://news.sciencenet.cn/htmlnews/2010/11/240103-5.shtml>.
- [8] Xi Jinping. Jointly Promote the Construction of the Belt and Road[N]. People's Daily, 2017-05-15(3).
- [9] Thomson Reuters., [EB/OL]. [2017-06-12]. <<https://jcr.incites.thomsonreuters.com/JCRJournalHomeAction?IXZ8QpKTzrCvCPzexxLlNFZ6bR5MS3ABI-18x2d4i3Y42nadzCix2BC4bxxs5fRAX3Dx3DA6tos4QGhCkMV9iyiHxxh55B2RtQWBj2LEuawx3Dx3D-1iOubBm4x2FSwJjjKtx2F71AaQx3Dx3D&SrcApp=IC2LS&Init=Yes>>
- [10] O' SULLIVAN A, CLEMENTS C. eBooks@ La Trobe-are they future ready?[J]. Health Inform, 2016, 25(2): 33-37
- [11] CARAWAY B L. Gleanings from the Whirl[J]. The Serials Librarian, 2016, 71(1): 70-82.
- [12] Hong Yinxing. Accurately Understanding the Goals and Tasks of Supply-Side Structural Reform[J]. China Industrial Economics, 2016, (06): 14-21.
- [13] Liu Xiang, Ma Feicheng. The Buyout Game in China's Academic Digital Information Resources Market[J]. Library and Information Service, 2012, (04): 56-60+111.
- [14] Pangpang Xing. The Sorrow of Libraries[M]//Cheng Huanwen, Liu Honghui, Liu Hong. Cheng Huanwen's Questions: Why Are Database Providers So Aggressive. Beijing: National Library of China Publishing House, 2016:229-240.

- [15] National Library of China[EB/OL].[2017-06-12].<http://dportal.nlc.cn:8332/zylb/zylb.htm>.
- [16] Xiao Long. Summary of 2015 University Resource Group Procurement Status / 2016 User Satisfaction Survey Report on Imported Resources[EB/OL].[2017-06-12]. <<http://lib.lzu.edu.cn/Tools/Download.aspx?file=5668>>.
- [17] Qiang Zili. “National Procurement” of Electronic Resources[J]. Library and Information Service, 2003, (04): 91-94.
- [18] Lü Huiping, Hu Chaode, Chen Yijun. Research on Development Strategies for Introducing Electronic Resources in China[J]. Journal of the China Society for Scientific and Technical Information, 2004, 23(4):
- [19] Thomson Reuters Announces Definitive Agreement to Sell its Intellectual Property & Science Business to Onex and Baring Asia for \$3.55 billion[EB/OL]. (2016-07-11) [2017-06-12]. <http://thomsonreuters.com/en/press-releases/2016/july/thomson-reuters-announces-definitive-agreement-to-sell-its-intellectual-property-science-business.html>.
- [20] Zhang Jianzhong. Cooperative Innovation: How The New York Times Plays with Crowdfunding[J]. Youth Journalist, 2016, (01): 78-79.
- [21] Zhao Yan, Zhang Xiaolin, Zheng Jiancheng. Transformation of Library Subscription Funds to Open Publishing Funds: Goals, Challenges and Strategies[J]. Library and Information Service, 2016, (01): 5-11.

Author Biography: Zhang Li-Ying (born April 1982), female, librarian. Research interests: information resource construction and services.

Address: Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, 155 Yangqiao West Road, Fuzhou, Fujian Province

Contact: Mobile: 18850403430; Email: 114587980@qq.com

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

Source: ChinaXiv – Machine translation. Verify with original.