Deeply Studying the Spirit of the 20th CPC National Congress and Promoting the Construction of World-Class Sci-Tech Journals with Chinese Characteristics (Postprint)

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Abstract

Objective: Guided by the spirit of the 20th National Congress of the Communist Party of China, this study explores models for establishing world-class scientific journals with Chinese characteristics.

Methods: Through literature analysis, case studies, and other methodological approaches, this paper thoroughly examines the essential conditions for world-class scientific journals, analyzes the current development status of China' s scientific journals, and proposes a conceptual framework for world-class journals with Chinese characteristics.

Results: The study presents a creation model for world-class scientific journals with Chinese characteristics, encompassing aspects such as leveraging institutional advantages, prioritizing social benefits, constructing an independent journal evaluation index system, strengthening Chinese-language journals, independently establishing large-scale scientific journal publishing groups, and launching additional new scientific journals.

Conclusion: China must emphasize "Chinese characteristics" in creating world-class scientific journals, uphold the original mission of journal publication, demonstrate courage in innovation and exploration, actively pursue new models for establishing world-class scientific journals, and realize the vision of becoming a powerful nation in scientific publishing with distinctive Chinese features.

Full Text

Preamble

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Abstract

Objective: Guided by the spirit of the 20th Party Congress, this paper explores models for establishing world-class scientific and technological journals with Chinese characteristics. **Methods:** Through literature analysis and case studies, the paper examines the essential conditions for world-class scientific journals, analyzes the current development status of China' s scientific journals, and proposes a conceptual framework for world-class journals with Chinese characteristics. **Results:** The paper presents a creation model for world-class journals with Chinese characteristics from six perspectives: leveraging institutional advantages, prioritizing social benefits, constructing an independent journal evaluation index system, strengthening Chinese-language journals, independently building large-scale scientific journal publishing groups, and launching new scientific journals. **Conclusion:** Building world-class scientific and technological journals in China must emphasize "Chinese characteristics," adhere to the original mission of journal operation, boldly pioneer and innovate, and actively explore new models for creating world-class journals to realize the dream of becoming a powerful nation in scientific publishing with Chinese characteristics.

Keywords: 20th Party Congress; scientific and technological journals; Chinese characteristics; academic community; world-class

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1. Definition of World-Class Scientific and Technological Journals

Regarding world-class scientific and technological journals, Academician Zhu Bangfen has offered his definition: they continuously and intensively publish world-class academic papers in a specific discipline or research field (or multiple related disciplines), with the published papers capable of leading their respective fields, exerting significant influence in academia, technology, and industry, and even affecting government decision-making [2]. Ren Shengli believes that world-class scientific and technological journals publish cutting-edge research achievements that can guide the direction of technological development and gain widespread recognition from experts and scholars in the field [3]. Xiao Hong provides definitions for world-class scientific and technological journals from the perspectives of academic journals and technical journals respectively

[4]. Wang Xiaofeng argues that whether a journal is "world-class" is ultimately determined by its users—the researchers [5].

Competition among nations in today' s world ultimately boils down to competition for talent and technology. The 20th Party Congress report emphasizes that science, technology, and talent are foundational and strategic pillars for building a modern socialist country in all respects. It stresses that we must regard science and technology as the primary productive force and innovation as the primary driving force, deepen implementation of the innovation-driven development strategy, open up new fields and new tracks for development, and continuously shape new drivers and new advantages for development. The report also calls for upholding self-reliance and strength in science and technology and accelerating the building of a powerful nation in science and technology [1]. The 20th Party Congress report summarizes the worldview and methodology of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as upholding a people-centered approach, maintaining self-confidence and self-reliance, adhering to fundamental principles while breaking new ground, maintaining problem-oriented thinking, applying systems thinking, and embracing a global vision [1], thereby charting the course and pointing out the pathways for the vigorous development of all Party and state endeavors.

2. Essential Conditions for World-Class Scientific and Technological Journals

To explore how establishing world-class scientific and technological journals with Chinese characteristics can contribute to building a powerful nation in science and technology, the author shares insights based on in-depth study and understanding of the spirit of the 20th Party Congress and Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, combined with practical experience in journal operation.

2.1 Strong Control and Integration Capabilities of Industry Resources

2.1.1 Attracting First-Class Professional Talent The 20th Party Congress report states that talent must be regarded as the primary resource. We must thoroughly implement the strategy for developing a quality workforce, adhere to talent-driven development, improve our independent training capacity for quality personnel, cultivate top-notch innovators, and gather talents from all over the world [1]. In building editorial teams led by chief editors, editorial boards, reviewers, and academic editors, we must recruit first-class leadership talent, professional talent, and experts and scholars into our journal operation teams [4], thereby assembling a professional and stable international core publishing team to serve the journal. Conversely, scientific and technological talent also serves as an accelerator for the high-quality development of scientific journals.

Experience from successful journals both domestically and internationally

demonstrates that the most important factor in running a good journal is selecting the right chief editor. An excellent chief editor is the soul of a journal, much like the conductor of an orchestra. The chief editor not only determines the journal' s direction but also organizes capable deputy editors, editorial boards, and editorial staff to effectively expand manuscript sources and ensure quality control. Additionally, the chief editor can mobilize all favorable resources, secure funding, and develop markets for the journal. Furthermore, building an outstanding editorial board is crucial. Editorial board members possess professional academic backgrounds and vocational skills that reflect the journal' s quality. A first-class editorial board can create a first-class journal, and world-class scientific journals have international editorial boards—the broader the national distribution, the higher the degree of internationalization [6]. Analysis of academic editors' resumes shows that editors at world-class scientific journals generally have postdoctoral research experience and have graduated from or worked at top-tier universities. Moreover, relying on large publishers can provide support for journals on international platforms, organize first-class reviewer teams, and utilize platform resources to build flagship journals and establish brand recognition (see [Figure 1: see original paper]).

2.1.2 Capturing World Science and Technology Centers and Top Scholars The 20th Party Congress report emphasizes that we must deeply implement the innovation-driven development strategy, open up new fields and new tracks for development, and continuously shape new drivers and new advantages for development [1]. World-class scientific and technological journals are always located at world science and technology centers, serving their development and closely following these centers and top scholars. Their significance is akin to that of *The New England Journal of Medicine* to Harvard Medical School or *Cell* to MIT. The rise of world science and technology centers will inevitably bring new development opportunities for scientific journals. High-quality scientific journals serve as platforms for supporting the growth of outstanding scientific and technological talent.

2.2 Capacity to Control and Lead First-Frontier Issues

In terms of topic planning, hot-spot tracking, and industry leadership, world-class journals focus on frontier issues, disciplinary boundaries, and interdisciplinary fields, particularly high-end and cutting-edge problems touched by human innovation [4]. The case journals investigated in this study have continuously published papers representing the progress of human scientific and technological development over the past century. From the discovery of neutrons and the DNA double helix structure in the era of "small science" to the moon landing and gravitational waves in the era of "big science," the published papers have directly shaped modern science as we know it. World-class scientific and technological journals are always closely connected with world-class scientific and technological achievements—this is the essential attribute of world-class scientific journals.

2.3 High Academic Discourse Power and Influence

The 20th Party Congress report calls for accelerating the construction of Chinese discourse and narrative systems, strengthening international communication capacity, comprehensively improving international communication effectiveness, and forming international discourse power commensurate with China' s comprehensive national strength and international status [1]. World-class academic journals possess high academic discourse power and influence in their fields, built through long-standing rigorous academic standards and effective services that resonate with the academic community. They focus on the vital interests of academic circles, demonstrate strong news awareness and service consciousness, and ensure strong communication initiative and consciousness, guaranteeing that published achievements become recognized results in the academic community.

2.4 Strong Scale and Good Benefits

For world-class scientific and technological journal construction, the focus is more on journal brand, reputation, and influence. World-class journals typically gather increasing numbers of scientific researchers through their platforms. By launching new journals or sub-journals, joining or being acquired by large publishing groups, and leveraging the accumulated effects of original journals [7], they continuously expand their scale by absorbing increasing manuscript sources internally. They then introduce scientific management concepts, naturally leading to substantially improved operational benefits.

2.5 Strong Capacity for New Technology Integration

The 20th Party Congress report emphasizes that we must uphold fundamental principles while breaking new ground. Over the past three decades, revolutionary advances in information technology have profoundly changed the external environment and internal operations of the publishing industry. The development history of world-class scientific and technological journals shows that all journals attach great importance to website construction [7]. Visiting the websites of world-class journals reveals that these major publications pay special attention to audience experience in the internet age, with the fundamental purpose of providing first-class services to authors and readers.

3. Current Development Status of China' s Scientific and Technological Journals

Although China has become a major journal publisher, it faces a shortage of world-class scientific and technological journals and is at a clear disadvantage in global scientific and technological competition [8]. Among the 24,516 journals indexed in Scopus, the United States (6,124 Scopus-indexed journals, 3,031 JCR (SCI) journals) and the United Kingdom (5,692 Scopus-indexed journals, 1,936 JCR (SCI) journals) constitute the first echelon. The Netherlands (2,273

Scopus-indexed journals, 740 JCR (SCI) journals) and Germany (1,690 Scopus-indexed journals, 611 JCR (SCI) journals) form the second echelon. Switzerland (639 Scopus-indexed journals, 262 JCR (SCI) journals), China (excluding Hong Kong, Macao, and Taiwan) (563 Scopus-indexed journals, 213 JCR (SCI) journals), France (499 Scopus-indexed journals, 172 JCR (SCI) journals), and other countries or regions constitute the third echelon [3].

Currently, the overall strength of China' s scientific and technological journals stands in stark contrast to the country' s rapidly growing research competitiveness. Although the number of SCI-indexed Chinese journals and their citation indicators have risen relatively quickly in recent years, the average annual publication volume has shown a continuous decline (from 2014 to 2018, the publication volume of SCI-indexed Chinese journals decreased by 16.46%, while total citations increased by 55.56% and impact factor increased by 78.04%). Particularly noteworthy is that during the decade from 2009 to 2018, while China' s output of scientific papers ranked second in the world, the total publication volume of Chinese scientific and technological journals showed a clear downward trend (see [Figure 2: see original paper]), indicating declining competitiveness for manuscript sources among Chinese journals. Compared with the number of papers published by Chinese authors, the publication volume of SCI-indexed Chinese scientific and technological journals (hereinafter referred to as "Chinese SCI journals") falls far short of meeting demand. In 2020, Chinese SCI journals accounted for 1.45% of global SCI publications, while Chinese authors accounted for 25.85% of global SCI papers. In 2020, Chinese authors published 549,845 SCI papers, of which 25,766 were published in Chinese SCI journals (4.69%). Chinese authors' papers in Chinese SCI journals accounted for 83.81% of the total publications in these journals. In 2020, Chinese SCI journals had 444 highly cited papers, accounting for 2.09% of the global total (21,264). Chinese authors produced 7,920 highly cited papers, accounting for 37.25% of the global total. In 2020, China ranked first among the top five countries in SCI publication volume, while Chinese SCI journals ranked fifth in publication volume, and ranked first and third respectively in citation influence and discipline-normalized citation influence.

4. Concept of World-Class Journals with Chinese Characteristics

According to the guiding requirements in *Opinions on Deepening Reform to Cultivate World-Class Scientific and Technological Journals*, the author defines "world-class scientific and technological journals with Chinese characteristics" as journals guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, based on national conditions and international realities [7], possessing a construction model for scientific journals that can simultaneously leverage "institutional advantages" and "market advantages," equipped with a completely independent journal evaluation index system, and demonstrating China' s scientific and technological innovation achievements and leading global

scientific and technological development on China' s own digital publishing and communication platforms [9].

5. Creation Models for World-Class Journals with Chinese Characteristics

5.1 Formulating Relevant Policies and Measures by Leveraging Institutional Advantages

Creating world-class journals with Chinese characteristics must first consider China's unique institutions. We need to cultivate an editorial team that is "both red and expert" and fully leverage our institutional advantages to advance world-class journal construction. Relevant authorities have already issued policies to reform the research evaluation system, such as implementing a representative work system for paper evaluation and requiring that no less than one-third of papers be published in domestic journals [7]. However, in the author' s view, this one-third proportion is far from sufficient—it should be increased to 90% or even higher. Through policy regulations, we should ensure that all research results from government-funded projects at national, provincial, and ministerial levels are published in domestic journals, as government-funded achievements should primarily benefit the nation.

By leveraging institutional advantages and mobilizing national resources, we should create an internationalized, scaled, and integrated academic "China International Import Expo" (combining technical training, academic reports, industrial exhibitions, and journal displays as "four-in-one") to make China an important hub for global academic exchange and scientific culture dissemination.

5.2 Prioritizing Social Benefits

The 20th Party Congress report states that we must embrace a global vision. This requires journal operators to remember their mission, firmly believe that national interests are paramount, always keep national scientific and technological development in mind, integrate journal development into the broader landscape of national scientific and technological development, and consistently lead the pace of national scientific and technological development. Therefore, China' s scientific and technological journal construction must always adhere to the principle of combining social and economic benefits while prioritizing social benefits, thereby fully leveraging the social and economic benefits carried by scientific journals [10].

Evaluation of world-class journals with Chinese characteristics must maintain the correct orientation, assessing them based on the social benefits generated by their achievements. Scientific and technological journals should contribute to national scientific and technological development and social progress. For example, *Construction Technology (Chinese-English)* magazine has established a "Belt and Road" engineering column focusing on major ongoing projects in

countries along the Belt and Road, providing timely reports on engineering technological innovations.

The foundation of science and technology lies in education. Scientific and technological journals can contribute to popularizing scientific knowledge among young people. For example, *Construction Technology (Chinese-English)* Magazine has cooperated with *Knowledge is Power* Magazine to jointly launch a "Major Projects" science popularization column. The two magazines have also jointly organized nationwide youth study programs on construction engineering, inviting academicians and national engineering survey and design masters to explain scientific knowledge in accessible language and arranging visits to construction sites to observe ongoing projects.

5.3 Constructing a Journal Evaluation Index System with Chinese Characteristics

According to the *2022 Chinese Scientific Papers Statistics Report* released by the Institute of Scientific and Technical Information of China [11], China' s share of hot papers ranked first in the world for the first time, and its number of highly cited papers continued to rank second globally. The number of papers published by Chinese authors in top international journals continued to rank second worldwide, while the number of high-level international papers continued to rank first. The number of high-level international co-authored papers by Chinese authors has grown steadily, with China-led co-authored papers accounting for nearly one-third of highly cited papers.

Currently, China should intensify efforts to implement a quality-equivalent evaluation system for Chinese journals, Chinese-English journals, and English journals, and focus on constructing its own journal evaluation index system.

5.4 Strengthening Chinese-Language Journals to Seize International Discourse Power

Academician Wang Pinxian believes that Chinese science urgently needs to transform toward "deep processing." To escape the awkward position of being a "subcontractor" with both ends (source and outlet) abroad, we must enhance the scientific "currency value" of the Chinese language and revitalize Chinese scientific and technological journals.

Chinese scientific and technological journals play an important role in academic communication and exchange in China. By the end of 2020, mainland China had 4,963 scientific and technological journals (excluding those that did not participate in the 2020 annual inspection), including 4,404 Chinese-language journals (88.74%), 184 Chinese-English journals (3.71%), and 375 English-language journals (7.56%). Chinese and Chinese-English journals combined account for 92.45% of the total. Among SCIE journals by language, there are 8,459 English journals but only 17 Chinese-language journals [12]. According to the *Annual Report on Chinese Academic Journal Impact Factors (2016-2020 Edition)* and

the *Annual Report on International Citations of Chinese Academic Journals (2016-2020 Edition)*, the influence of Chinese scientific and technological journals is primarily concentrated domestically.

Cases such as the publication of important academic papers by internationally renowned scientists like Tu Youyou and Chen Jingrun in Chinese journals demonstrate that significant research results published in Chinese journals can also have high international impact. Chinese scientific and technological journals should actively explore the open-access (OA) publishing model and consider fully adopting this model when conditions are ripe. Each year, we should select outstanding Chinese scientific papers and translate them into English for external display and exchange. We should also actively build cooperation platforms between domestic and international universities and research institutions, guiding these institutions to prioritize publishing research results in Chinese scientific journals and organizing annual awards for the ten most highly cited authors with certificates and prizes.

5.5 Independently Building Large-Scale Scientific Journal Publishing Groups

The 20th Party Congress report emphasizes that we must maintain self-confidence and self-reliance while continuously improving strategic thinking, historical thinking, dialectical thinking, systems thinking, and innovative thinking. For years, the debate has continued in the journal community about whether to "sail by borrowing others' boats," "buy boats to sail," or "build boats to sail." For some time, China adopted the "sail by borrowing others' boats" approach to participate in international academic exchange. On one hand, this required paying high copyright fees, publication fees, and editing fees, as well as database usage fees to international publishers, while also providing data and raw materials, leading to resource loss. On the other hand, Chinese scholars' important academic resources account for nearly 50% of many foreign journals, and the storage of China' s key scientific data and scientist information in databases of foreign companies seriously jeopardizes national information security [13]. To prevent China' s rise, the United States has suppressed and restricted China' s development in various fields, particularly in high-tech sectors—for example, the U.S. "CHIPS Act" targeting China' s semiconductor industry and the construction of a semiconductor "containment alliance" to comprehensively besiege China. Therefore, it is imperative to systematically and step-by-step transform from "sail by borrowing others' boats" to "build boats to sail" —that is, to construct an independent publishing and communication platform.

Additionally, we must consider practical issues. China' s journal sponsors and supervising units are generally dispersed (see [Figure 3: see original paper]), and relationships are often complex. Merging or acquiring weaker journals to strengthen publishing institutions is operationally troublesome. Instead, it may be more effective to "break out" by merging with or acquiring promising for-

eign journals to strengthen the capabilities of Chinese publishing groups. This approach could also invite internationally renowned experts to serve as international editorial board members, contributing to the high-quality development of Chinese journals.

5.6 Launching More New Scientific Journals to Fill Disciplinary Gaps

By the end of 2020, the United States had 12,274 scientific and technological journals and the United Kingdom had 6,214, while China had 5,071 by the end of 2021. Therefore, in terms of journal quantity, there remains a considerable gap compared with top-tier journal powerhouses. We must conduct in-depth research and analysis, clearly identify our advantageous disciplines, and proactively establish new scientific journals in cutting-edge and interdisciplinary fields [10] while improving the quality of journals in related disciplines.

The 20th Party Congress report analyzes international and domestic situations, elaborates on major issues such as opening new frontiers in adapting Marxism to the Chinese context and the needs of the times, and the Chinese characteristics and essential requirements of Chinese-style modernization, and outlines the grand blueprint and practical pathways for building a modern socialist country in all respects [1].

Creating world-class scientific and technological journals with "Chinese characteristics" must be based on China's national conditions and international realities, never forgetting the original mission of journal operation. We must actively explore world-class journal construction models that can simultaneously leverage "institutional advantages" and "market advantages," give full play to China's gradually strengthening scientific and technological competitiveness, independently build large-scale scientific journal publishing groups, focus on supporting Chinese-language journals, establish a Chinese-characteristic evaluation system, launch more new scientific journals, and fill disciplinary gaps. We firmly believe that under the strong leadership of the Party, with planning and guidance from the highest decision-making level, and through the unremitting efforts of scientific and technological workers and journal professionals, we can seize the excellent opportunity of national reform of the research evaluation mechanism. By building world-class academic and scientific exchange platforms, we will enhance the global competitiveness of China's scientific and technological journals and elevate China's voice in international science and technology. Reform knows no bounds, and innovation never stops. In the near future, we will certainly achieve the dream of becoming a powerful nation in scientific publishing with Chinese characteristics.

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