

Strategies Concerning Synergistic Development Between Scientific Journals and Academic Communities

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Abstract

This research aims to undertake a comprehensive overview of how scientific journals interact with academic communities, comparing them to academic communities. This research investigated the salient features of Chinese scientific journals in relation to academic communities, entailing a systematic approach to overseas literature review, translation, analysis, and synthesis of the attributes of academic communities. The conclusions underscore the necessity for: (1) Enhancing the formation of academic communities through the demarcation of academic resources and enhancement of dissemination frameworks; (2) Catalyzing the evolution of academic communities via the institution of governance and augmentation; (3) Amplifying the cohesive attraction of academic communities by guiding research directions and diversifying resource capabilities; (4) Elevating the impact of academic communities on scientific journals. In conclusion, global scientific journals are positioned to construct and nurture academic communities that resonate with their distinctive professional identities, thereby utilizing collective synergy to enhance the overall impact of scientific journals.

Keywords

Synergistic Development; Scientific Journals; Academic Communities

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Introduction

Within the context of facilitating the construction of the global academic community for scientific research, scientific journals, functioning as essential platforms for the dissemination of academic research results, are significant entities (Hayes et al. 2021; Xiao et al. 2012; Xiao et al. 2014). Among these, the promotional influence of the academic community on the development of scientific journals holds supreme importance (Allen et al. 1993; Azizi et al. 2022; Yamada et al. 2023). It not only involves generating and evaluating academic papers and scientific achievements in themselves, but also guides and promotes the trend of the academic frontier and expedites the transformation of scientific research and innovative achievements (Ebadi et al. 2020; Krawczyk et al. 2021; Wenzler and J. 2017). Additionally, scientific journals serve as effective carriers and upgrading platforms for facilitating the formation of academic communities, and this has great significance for the construction and efficient operation of such communities (Burright et al. 2005; Nicholas et al. 2009; Spezi et al. 2017; Yu et al. 2021).

The academic attribute of scientific journals determines that it should be the core organizer of the academic community, which is an inevitable selection for creating high-quality scientific journals and also reflects the inherent law of journal development (Chen et al. 2018; Enk et al. 2017; Jiang et al. 2023; Johnston and C. 1998). In this critical era of accelerating the construction of the global academic community for scientific research, promoting the coordinated development of scientific journals and academic communities has emerged as a crucial matter that cannot be ignored (Akça et al. 2021; Nguyen et al. 2021; Parameswaran et al. 2006; Schaffer et al. 1996).

Currently, in general, there is a remarkable gap between Chinese scientific journals and overseas mainstream journals, and one of the main factors is that the role of the academic community is not fully utilized (Harzing et al. 2015; Huang et al. 2022; Jesus et al. 2015; Veretennik et al. 2023). Although journal publishers are aware of the existence of this problem, they do not know how to better stimulate the potential and role of the academic community through scientific journals and develop in coordination with it (Kim et al. 2020; Lin and C. 2020; Thelwall and M. 2021; Yue et al. 2021; Zheng et al. 2017). Existing research fails to pay sufficient attention to the important role of scientific journals and academic communities in this regard (Abalkina and A. 2021; Cislak et al. 2018; Wang et al. 2006).

Hence, there is an urgent need to clarify the significant mutual interaction between scientific journals and the academic community. Accordingly, this research takes journals such as oceanography as examples to explore the synergistic effect between scientific journals and the academic community, with the aim of providing strategies for global scientific journals to fully utilize the role of the academic community in achieving high-quality development.

Data Collection and Profiling

This research embarks on a comprehensive investigation of the status of academic communities within Chinese scientific journals, encompassing an analysis of their underlying mechanisms, internal structures, organizational operations, value functions, and the roles they fulfill. To gain insights into the global landscape, a systematic search of the Web of Science (WoS) SSCI dataset was conducted, yielding an initial corpus of relevant literature entries through the categorization of "Scope Collection + Object Collection". A subsequent refinement of the search criteria to include "Function (the role of academic communities)" culminated in a focused set of core documents (see details in [Table 1](#)).

A detailed examination of this literature led to the selection of representative and well-established mainstream overseas academic journals as the primary subjects for analysis, with a particular focus on the structure of their academic communities and the roles these communities play in journal operations. By engaging in a comparative analysis of the structure, roles, participation, contribution, management, and operational mechanisms of academic communities across Chinese-hosted scientific journals and their mainstream international counterparts, this study draws upon international experiences and practices to propose actionable solutions and strategies. The findings aim to provide effective guidance for fostering the collaborative development of Chinese scientific journals and their associated academic communities.

Table 1 Comparative analysis of the relation of Chinese and overseas journals with academic community

Dimensions	Chinese scientific journals	Overseas scientific journals
Journal organizer	The core of journal organizer is an institution instead of frontline scholars	Mainly are academic associations or scientific institutions, or some are publishers
Resource boundary	Lack of clearly defined professional boundaries or specific positioning (9), and academic community is not specific towards journals	Journals advocate for high-quality, precise and cutting-edge professional knowledge. More top-tier the journal, and more distinctive its focus (9)
Community structure	Relatively loose (21) or not formed yet	Comparatively tight (19)
Management and operational mechanism	Simplistic journal management model, dispersed academic community power, and weak academic support base	Highly specialized and autonomous with little non-academic interference; rigorous review procedure and scientific evaluation system (23); clearly defined roles with high levels of collaboration, cohesion and initiative (12)
Group function	Journals primarily serve scholars and the development of disciplines, and there is an urgent need to enhance their role in science popularization (15)	Journals serve communities at various levels and layers, enabling community members to achieve specific goals through journal articles (24).
Form of function	The roles are primarily confined to short-term interactions such as submission and peer review, and the journal is not deeply integrated within the academic community (21)	The academic community leads and promotes the development of journals, and plays a significant role in assessing and verifying journal's brand value (12)
Participation and contribution	Members of the academic community have imprecise orientations, poor spillover efficiency and a low level of overall contribution (22)	Members of the academic community are closely connected and well-coordinated, deeply involved in the development of journals, and achieving efficient results (19)
Information exchange	Journals often benefit researchers by promoting their academic achievements and securing project funding	Journals serve social groups by promoting research outcomes, transferring knowledge, securing project funding, and influencing policy formulation through published papers (24).
Academic discourse power	High-quality papers are relatively scarce, and academic resources are not concentrated, which affects academic discourse	Strong academic discourse and leadership, with a clear dominant position

Results and Discussion

Cornerstone of Scientific Journals: Rationalized Structure of the Academic Community

The composition of the academic community within mature journals typically involves several key roles: (1) the sponsor, which is often an academic or research institution and may also be the publisher; (2) the publisher, which can be a commercial publishing company or a university press; (3) the editorial board, authors, peer reviewers, readers, and journal

staff, predominantly sourced from the publishing organization. These members collectively form the core of the journal, contributing to the enhancement of its academic quality and the value of its published outcomes.

Within the academic community, editors and academic evaluators play a pivotal role. They serve not only as guardians of academic quality but also as catalysts for academic innovation. Editors are responsible for the identification and selection of manuscripts, and they wisely detect those with potential for innovation and academic value, ensuring the academic standards and quality of research outcomes published in the journal. Through their professional editing, they enhance the clarity and logical strictness of papers, aligning them with academic norms and journal standards.

Simultaneously, the work of academic evaluators is equally significant. Drawing on their profound academic backgrounds and expertise, they conduct strict peer reviews of manuscripts. They assess the academic contribution and theoretical depth of papers, as well as the rigor of research methods and the reliability of data. The opinions and suggestions of academic evaluators are crucial for enhancing the quality and academic value of manuscripts, directly impacting the journal's academic reputation and influence. The collective efforts of editors and academic evaluators lay a solid foundation for the long-term development and academic progress of journals. By ensuring that every article published in the journal undergoes strict screening and optimization, they continuously elevate the journal's academic level and influence, providing high-quality knowledge outputs to the academic community. Their work not only deepens and broadens academic exchanges but also drives the innovation and development of academic research.

The academic community of scientific journals is a product of community organization, characterized by a high degree of industrial self-regulation. The community is closely linked to academic journals, and journal publishers, as a component of the academic community, play a fundamental role at different stages of overseas journal operations. With clear division of labor and strong collaborative capabilities, they exhibit high levels of collaboration, cohesion, and initiative, contributing positively to the functioning of journals. Many journals are initiated directly by associations or organizations, and the editorial board, as a central member of the community, demonstrates strong sense of responsibility and mission, actively participating in manuscript invitation, review, and promotion. Journal publishers, such as commercial publishing companies, have established relatively comprehensive and complete publishing ethics standards after nearly a century of development. These journals boast a very active community of authors, readers, and peer reviewers, making significant contributions in the production, dissemination, and evaluation of high-quality academic journal outcomes.

With the rise of digital technology, new media platforms have not only widened the ways academic journals are shared and promoted, but also have integrated communicators and the public closer to the academic community. Research scholars, such as authors and readers, as providers of high-quality contributions, have a direct impact on the academic level of the journal. Although different journals may vary in the size, structure, positioning, and scope of their editorial boards, authors, readers, and peer reviewers, mature journals often possess a more stable community system, with members who are more authoritative, professional, and cohesive. This robust system is key to the success and sustainable development of the journal.

Academic Community: The Decisive Force in the Development of Journals

The academic community plays a decisive role in determining the scholarly standards and the value of research outcomes published in journals, providing critical guidance and impetus for the development of these publications. For instance, the prestigious status of top-tier academic journals such as "Nature" and "Science" is largely attributed to the robust academic community supporting them. Composed of experts and scholars actively engaged in the forefront of scientific research, these communities have a profound impact on the academic capacity and the value of the research published in these journals.

Taking "Nature" as an example, the demands of its academic community have driven the journal to adhere to stringent

academic quality standards since its starting. Throughout the journal's evolution, the academic community has not only provided broad recognition in terms of scholarly quality, but has also played a crucial role in the evaluation and validation of the journal's brand value. Such evaluations extend beyond citation metrics to encompass a whole assessment of the journal's brand by the academic community.

Theoretical and practical insights from the evaluation of overseas academic journals indicate that the academic community's assessment of scientific journal brands is instrumental in guaranteeing the quality and standards of these publications. This evaluation system facilitates the continuous enhancement of a journal's scholarly quality, promotes the advancement of scientific research, and supplies the academic sphere with higher-quality knowledge outputs. Consequently, the academic community plays a vital role in the evaluation of scientific journal brands, exerting a significant and lasting influence on the development trajectory of these journals.

Management and Operation of the Academic Community: Propelling High-Quality Development of Journals

In terms of management mechanisms, the academic community demonstrates a high degree of professionalism and strong autonomy, which minimizes external non-academic interventions, thereby ensuring the realization of academic democracy in the management framework. Within this framework, members of the journal's academic community engage in unblocked communication and dialogue, which not only reflects the journal's professional function in academic exchange and communication but also provides necessary conditions for the personalized innovation of the academic community's operational mechanisms. This open and interactive management model aids in consensus-building, propels academic development, and allows for the timely reflection and resolution of potential issues within the academic community, thereby enhancing the overall quality and influence of the journal.

Regarding operational mechanisms, the academic community possesses a relatively comprehensive and flexible operational system that effectively employs emerging technologies, informatization methods, and digital tools to achieve optimal resource allocation and maximize benefits. Different roles within the community, such as authors, reviewers, editors, and others, maintain close connections and a harmonious collaboration, deeply participating in the journal's construction and demonstrating high efficiency. Furthermore, the academic community has established a rigorous review process and a scientific evaluation system, which not only enhances academic norms but also ensures the value and impact of the journal's published outcomes to the greatest extent. Through such operational mechanisms, the journal can attract and publish high-quality academic papers, further enhancing its status and reputation in the academic community.

Chinese Scientific Journals Confront Grave Structural Challenges in the Academic Community

Insufficient Systematic Organizational Operation

The academic community within Chinese scientific journals often limits its interactions between editors, authors, peer reviewers, and experts to short-term processes such as manuscript submission, peer review, and organizing journal events, failing to establish a long-term symbiotic ecosystem. While this communication model does facilitate the dissemination and exchange of academic achievements to some extent, it fails to fully utilize the long-term resources and potential of the academic community's members.

In terms of organizational operations, the academic community's strength is fragmented, lacking a systematic approach to business management. This spread-out allocation of resources and operational model restricts the potential of the academic community in driving the development of journals.

Furthermore, the cohesion within the academic community of most scientific journals is insufficient, with a weak academic support base, and there is a disconnect between the academic community and academic disciplines. This phenomenon has hindered the academic community from fully leveraging its role in journal development and has also impacted the journal's academic influence and competitiveness.

Improvements Required for Disciplinary Layout

The distribution of disciplines in Chinese scientific journals is imbalanced. According to literature reports, journals host by China that were included in the Science Citation Index (SCI) were distributed only third of the total research fields in the SCI. China lacks journals in emerging and interdisciplinary fields, resulting in gaps and redundancy in certain areas. Some fields have an excess of journals, leading to homogeneity and repetition.

Additionally, the quantity and proportion of comprehensive academic journals also affect the segmentation and optimization of the academic community. Taking oceanography as an example, half of these journals are a mixture of multi-disciplinary subjects, including physical oceanography, geology, biology, chemistry, and other sub-disciplines, making it difficult to target specialized academic communities.

Moreover, under the extensive overall planning of management units and academic organizations, scholars are gathered without differentiating their strengths, resulting in a concentration of scholars on a limited number of high-impact factor journals. This not only makes it difficult for these few journals to manage the overload of scholars but also leaves many journals unattended, rendering them helpless in attracting scholars to build a community. This phenomenon is widespread across other disciplines as well.

Tap the Unmanifested Potential of the Academic Community

Chinese scientific journals in technology face deficiencies in their professional distribution, characterized by ambiguity in positioning and an overabundance of covered domains. According to the China Core Scientific Journals Directory (2022, Natural Science Edition) released by the China National Information Center, over half of marine science journals are belonging to comprehensive journals. Similar issues are prevalent in other natural science domains such as geology, atmospheric science, and environmental science. Moreover, the journals suffer from homogenized topics, repetitive content, and consequently, an indistinct professional boundary for their academic communities. Scholars find it challenging to differentiate between similar journals, often relying solely on impact factors for judgment, and in some cases, placing more trust in overseas journals than domestic ones. The academic communities struggle to identify their focus areas, making it difficult to contribute to journals in a sustained and long-term manner.

Technology journals lack a systematic organization of academic communities, with unclear guidelines for the members' policy, responsibilities, obligations, contributions, and reward-punishment mechanisms. Some journals have not even established relevant regulations for academic community members. This research found that none of marine science journals listed in the Beijing University Chinese Core Journal Directory (2023 Edition) have formal regulations for academic community members. This lack of regulations weakens the "spillover effect" generated by academic communities, reduces their ability to attract individual academics, and limits the growth of the concentric circles centered around the academic community centered on the technology journal.

In China, the main bodies organizing scientific journals are typically "institutions." Influenced by institutional and sponsorship relationships, the titles and positions of potential community members are often considered during the selection process, leading to a certain degree of administrative influence. Statistics show that the phenomenon of some marine science journal editorial board members having a personal H-index of 0 is not unique. Some members lack publication experience and the ability to engage in peer review but still hold significant positions within the group. Such "communities" are heavily influenced by non-academic factors and do not constitute a true academic community. Their impact on the high-quality development of journals is minimal.

Strategies Proposal

How to Build-up One Structured Academic Community Around Scientific Journals
Well-Organized Discourse System and Integrated Platform

It is particularly important to focus on discourse systems to inspire the contribution of academic community members and enhance their sense of honor with well-organized discourse system. Journal's editors-in-chief attracts scholars and professionals to participate in publishing activities and contribute academic strength. Through the leadership of the academic community members, they should engage in scientific communication and popular science work, strengthening the mission and social responsibility of the publishing institution. Journals should establish a discourse system through clear academic branding, reasonable positioning of academic status, and by setting up scientific issues for discussion and organizing academic exchange activities.

Journals should utilize this cohesive model through integrated platform by organizing academic activities and setting topics to construct academic discourse power, guiding scientific communication. Scientific journal publishing institutions should promote an integrated publishing platform to enhance publishing efficiency and display effectiveness.

Precise Target and Systematic Construction

The clarity of the journal's professional positioning and precise target contributes to the specialization of peer review, enhances reader engagement, and promotes dialogue within academic communities within the discipline. The reallocation of journal resources and the pursuit of differentiated research directions contribute to the development of the discipline. Scientific journals leverage their abundant disciplinary, academic, and expert resources to effectively organize scholars and professionals in conducting scientific publishing activities. Moreover, journals in specialized fields with systematic construction will facilitate the construction of precise academic communities, facilitating resource management, sharing, and utilization, and promoting the dissemination and innovation of scientific knowledge.

Precise Target and Systematic Construction provides scholars with more professional information, thereby enhancing the academic value. As members of the academic community, individuals can focus their efforts on related research results and engage in more potential work on the journal's publishing platform, including the dissemination of scientific research information, intellectual support, academic contribution, peer review, and active promotion of the journal. This leads to recognition of academic value and accumulation of academic status.

Expansion and Stabilization of Radiation Capacity

In both Eastern and Western societies, there is a common phenomenon of government and administrative power intervening in academic evaluations, with differences in the extent and objectives of this intervention, which primarily revolve around whether it genuinely serves the scientific community. On a democratic journal platform, the academic community is less disrupted by non-academic factors, enabling it to fully utilize its academic value. Scientific journals should play a central role in transmitting information and organizing innovation to foster the development of the academic community. The "spillover effect" is an important path for community development. The maturity of the academic community is a fundamental indicator of the flourishing development of a discipline. Scientific journals recognize the complementary relationship between disciplines and academic communities, innovate organizational forms, and promote the sustainable development of the academic community.

To promote the continuous development of the community and stable the radiation capacity, scientific journals need to strengthen their ability to absorb new members. By continuously exploring, developing, and absorbing new forces through the academic community, the composition of members can be enriched, contributing to the sustainable development of the academic community. High-level scientific journals advocate for academic democracy and autonomy, allowing academic endeavors to return to their essence.

From a technological development perspective, future AI technologies and artificial intelligence will greatly facilitate the efficient collaboration of scientific journals with academic communities. For example, deep learning can assist in capturing cutting-edge topics in disciplines, and AI profiling technology can identify new members of the community, and

intelligent recognition and error correction technologies. Both of them will introduce more enabling models and methods for community development, achieving optimal resource allocation and benefit transformation.

Shaped Dissemination System for Rational Demands

In the process of providing high-quality publishing services for the academic community, constructing a dissemination system is crucial. It ensures that scientific research achievements, major discoveries, and academic viewpoints are widely and rapidly disseminated. Establishing a dissemination system for original academic content is the foundation and an effective means to enhance discourse power.

Specifically, this requires journals to have a deep understanding of the development trends in their own discipline areas and to accurately grasp the needs of the academic community. Based on this, journals should choose appropriate dissemination channels, such as academic conferences, professional forums, and social media, to ensure that academic content reaches the widest audience. At the same time, journals should use advanced information technology tools, such as big data analysis and AI assistance, to improve dissemination efficiency and effectiveness.

Journals in different fields should tailor their dissemination models and systems to align with the unique characteristics of their respective disciplines and the specific needs of their academic communities. In addition, journals should focus on the construction of the academic community by organizing various academic activities, such as seminars and workshops, to promote communication and collaboration among scholars and enhance the cohesion of the academic community. Journals should also pay attention to the growth of the academic community, providing more development opportunities and platforms for scholars, such as establishing research funds and providing financial support for academic exchanges. In summary, establishing a dissemination system for original academic content not only helps to enhance the discourse power of the journal but also contributes to the construction and development of the academic community. This is of great significance for promoting the prosperity and progress of academic research.

Strategies to Augment the Importance Academic Community onto Scientific Journals

Shaping the Brand and Ecological Circle of Scientific Journals by the Academic Community

The brand of a scientific journal encompasses not only its name and external form but also its philosophy, characteristics, quality, and competitiveness. These intrinsic elements are closely related to the contributions of the academic community. Firstly, the competitiveness of the journal reflects, to some extent, the academic leadership ability of the academic community. The academic community must strive for distinctiveness in topic selection, manuscript organization, and journal activities. Secondly, the quality of the journal is the core of brand support, and the academic community needs to pass on the intrinsic quality across generations, which is the foundation of the journal. Publishing articles that lead and have high academic value can enhance public attention and brand influence. Lastly, uniqueness is the key to brand building and an irreplaceable element of the journal. Members of the community play significant roles in manuscript selection, peer review, and journal monitoring within the quality system.

The academic community must provide strong support for the construction of the ecological system of scientific journals. Leaving significant academic traces in the history of disciplines and promoting academic prosperity are the values pursued by scientific journals, which require the academic community to achieve. Firstly, the academic community should assist in establishing close internal connections within the ecological circle of the scientific journal, breaking through barriers in policies, technology, education, and industries to form seamless links between the scientific journal and industry-university-research. Secondly, the academic community must lead the development of ecological dynamics in the field of disciplines, focus on advantageous areas and major needs, cultivate a high-level author group, and closely surround the scientific journal, delivering high-quality research achievements and constructing a favorable discipline ecological environment. Lastly, the academic community's diffusion effect on the external network of the scientific journal's ecological circle will bring more opportunities for cooperation and exchanges, creating more win-win opportunities. The

scientific journal can become an important medium for the timely transformation of innovative research results from universities and research institutions and an important source of scientific research projects for the industry.

Achieving Cohesion to Journals Based on Orientation Paradigms

The academic community has a distinct orientation towards the role of scientific journals. The information and knowledge required for the development of disciplines are transmitted through journals, as well as the achievements of members from scientific institutions. The technological policies and norms of social groups are scientifically expressed through journals. This fully demonstrates the necessity of the academic community for journals. Thus, journals should fully understand their functions and strengthen their cohesion with the community members, such as focusing on the support and funding of the scientific system.

For scientific journals, the academic community serves as an important window and carrier. The academic community is the main force driving academic prosperity, providing continuous vitality. Its value dissemination, think tank policies, and scientific support provide material for journals. In terms of content evaluation, the community's quality control, forward-looking analysis, and academic evaluation ensure the authenticity and authority of the content.

Expanding the Service Capacity of Journals Based on the Resource Specialties of Community Members

Members' expertise in specific scientific topics can initiate special issues to gather global peers' resources, all of which strengthen the diverse cohesion of the journal through members' personalized resource specialties. Members of the academic community of scientific journals come from multiple research institutions, and the resource directions vary due to the differences in the institutional and individual academic environments.

Members who hold roles in overseas academic organizations from different countries and regions can bring more diverse audience resources to journals. At the management level, journals require the unity of the community group, while individual members are more expected to contribute differentiated and diversified content and methods.

Conclusion

By comparing the similarities and differences in the collaborative development of Chinese/overseas scientific journals and the academic community, the deficiencies of Chinese scientific journals in constructing and operating the academic community are analyzed from multiple perspectives such as group structure, role-playing, contribution degree, management mechanism, and resources (see Figure 1).

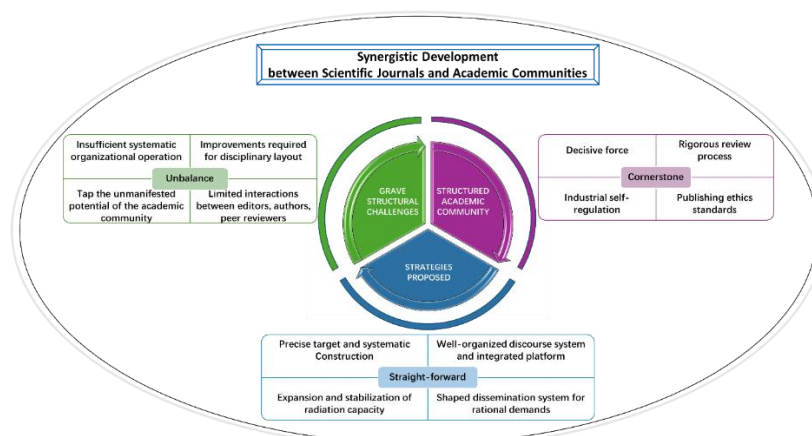


Figure 1 Synergistic Development between Scientific Journals and Academic Communities

Scientific journals can construct the academic community through precise locking and systematization, construct the discourse system through elaborate organization of the academic community, and construct the communication system around the demands of the academic community. Meanwhile, journals strengthen the illustration of the orientation

paradigm of the academic community, the research on the implementation measures of the centripetal force of the periodicals, and the research on the construction strategy of the periodical brand power and the academic ecosystem. The development of journals expands the radiation ability of the academic community through the democratized platform and empower the development of the academic community through disciplinary development and scientific and technological development.

Achieve the centripetal force to the journals based on the orientation paradigm of the academic community and expand the ability to serve the journals based on the resource specialties of the community members. The academic community enhances the influence of scientific journals through the shaping of the brand of the scientific journals and the shaping of the ecosystem of them. The academic community is also an important force to promote the high-quality and sustainable development of scientific journals.

The proposal of the collaborative development strategies helps scientific journals to better organize the strength of experts and scholars, give play to the value of the academic community, make the members of the academic community focus on the frontiers, drive innovation, and disseminate achievements. This research makes contributions to scientific and technological innovation and high-level scientific and technological self-reliance and self-improvement.

Author contributions

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Conflict of interest statement

The authors declare no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.