Strategies for Scientific Journals to Enhance Communication Impact in the New Media Era: Postprint

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Date: 2023-10-08T00:00:00+00:00

Abstract

Scientific journals serve as crucial vehicles for disseminating cutting-edge scientific and technological achievements and theories, playing a pivotal role in the field of scientific information communication. With the advancement of new media technologies, the channels and methods for disseminating research outcomes have become increasingly diversified, while the communication capacity of scientific journals has diminished, gradually placing them at a competitive disadvantage in the market. Consequently, enhancing the dissemination influence of scientific journals has emerged as a critical concern requiring focused attention and resolution in their operations. Accordingly, this paper elucidates the novel circumstances confronting scientific journals in the new media era, identifies factors constraining their dissemination influence, and proposes several strategic responses for the consideration of fellow professionals.

Full Text

Preamble

Strategies for Enhancing the Communication Influence of Science and Technology Journals in the New Media Era

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Abstract: Science and technology journals serve as crucial carriers for disseminating cutting-edge scientific achievements and theories, playing a vital role in the field of scientific information communication. With the development of new media technologies, the channels and methods for disseminating research results have become more diversified, yet the communication power of science and technology journals has been somewhat weakened, gradually placing them at a

disadvantage in market competition. Therefore, how to improve the communication influence of science and technology journals has become a key issue requiring focused attention and resolution in their operations. Based on this context, this paper elaborates on the new circumstances facing science and technology journals in the new media era and the factors constraining their communication influence, and proposes several coping strategies for peer reference.

Keywords: new media; science and technology journals; journal quality; influence; big data

CLC Number: G237.5
Document Code: A
Article ID: 1671-0134(2021)05-035-03
DOI: 10.19483/j.cnki.11-4653/n.2021.05.009

Citation Format: Dong Zhigang. Strategies for Enhancing the Communication Influence of Science and Technology Journals in the New Media Era[J]. China Media Technology, 2021(05): 35-37.

Science and technology journals are important carriers for disseminating scientific theories and showcasing scientific achievements, playing a significant role in leading technological development and demonstrating scientific strength. In the new media era, the communication power of science and technology journals has encountered certain impacts, and their development faces tremendous pressure. In reality, new media represents both a challenge and an opportunity for science and technology journals. The distribution departments of these journals must explore effective strategies to enhance their communication influence according to the development requirements of the new media era. Faced with a vast array of candidate journals, audiences prioritize quality as their first requirement, which has caused poorly produced, low-quality journals to lose their competitive advantage and be gradually eliminated from the intense market competition. Precisely because of this, many journal editors have recognized the vital importance of quality for journal survival and development, placing greater emphasis on journal quality in their editorial work and hoping to expand their development space through high-quality scientific papers. Additionally, according to the Blue Book released by the China Association for Science and Technology, the number of publishing houses capable of delivering high-quality journals remains relatively small, presenting a significant opportunity for distributing high-quality science and technology journals in the new media era.

1. New Circumstances for Science and Technology Journals in the New Media Era

1.1 Coexistence of Audience Loss and Gain

New media is a double-edged sword for science and technology journals. On one hand, the rise of new media has broadened the channels through which

audiences access scientific knowledge. In addition to subscribing to traditional print journals to obtain entire issues, readers can also access relevant journal content on academic websites such as Wanfang and CNKI. Compared with traditional print journals, these new media-based reading methods better satisfy readers' needs for anytime, anywhere reading, enabling them to make full use of fragmented time. From this perspective, new media has diverted audiences from science and technology journals. On the other hand, in the new media era, scientific and technological information is exceptionally well-developed, greatly accelerating the pace of technological development and intensifying competition among different technology providers. Consequently, an increasing number of corporate scientific and technical personnel are eager to understand the latest developments in research fields to provide references for their own technological innovation. As authoritative representatives of various research information carriers, science and technology journals undoubtedly serve as the best channel for people to acquire cutting-edge scientific knowledge. Meanwhile, the integrated development of science and technology journals with new media has effectively broadened their dissemination channels, enabling more people to access and understand these journals and become loyal audiences. Therefore, the audience for science and technology journals in the new media era exhibits a trend of simultaneous loss and gain.

1.2 Enhanced Quality Requirements

In the new media era, the audience for science and technology journals has increased substantially, and journal types have become more diversified. The number and types of journals available for readers to choose from have shown rapid growth, allowing audiences to select journals that meet their interests, preferences, and actual needs from vast journal resources. This has also made quality the primary criterion for audiences when choosing journals, causing poorly crafted, low-quality journals to lose their advantage in fierce market competition and be gradually eliminated by competitors. For this reason, many journal editors have recognized the significance of quality for journal survival and development, paying greater attention to journal quality in their editorial work and hoping to expand their development space through high-quality scientific papers. Moreover, according to the Blue Book released by the China Association for Science and Technology, the number of publishing houses capable of providing high-quality journals is still relatively small, which presents an important opportunity for distributing high-quality science and technology journals in the new media era.

1.3 Diversification of Journal Types

In the new media era, refinement represents a new characteristic of scientific and technological development. The previous disciplinary-bound framework for scientific development and research has gradually been broken, with research activities increasingly exhibiting multidisciplinary integration features. Corre-

spondingly, articles published in science and technology journals also demonstrate cross-disciplinary and cross-professional phenomena. For example, some journals that originally only published professional academic papers in a specific field have begun to expand into other specialties and fields, developing toward comprehensive journals.

1.4 Opportunities Brought by New Media for Journal Communication

The advancement of science and technology and the arrival of the new media era have significantly impacted the distribution and communication of science and technology journals while also endowing them with new characteristics and creating new development opportunities. With the advent of the Internet Plus era, the number of internet users in China has continued to increase, especially with the popularization of smartphones leading to a substantial increase in mobile internet users. Correspondingly, the number of new media audiences has also continued to grow. New media compensates for the shortcomings of traditional journals with its advantage of rapid dissemination, effectively broadening their communication channels and accelerating communication speed, thereby facilitating the smooth transformation and cross-platform integration of science and technology journals and contributing to their sustainable development. The integration of traditional and new media has also received attention and support from relevant government departments, with multiple successful cases accumulating rich experience for the development of science and technology journals. Therefore, the new media era provides development opportunities for science and technology journals, and achieving integration between new media and science and technology journals represents an inevitable trend for their development.

2. Factors Constraining the Communication Influence of Science and Technology Journals in the New Media Era

With scientific progress and the arrival of the Internet Plus era, new media technologies have emerged and been widely applied. New media is gradually changing people' s reading habits, making them increasingly favor obtaining information through the internet, while the communication power of traditional print media has rapidly declined and its living space has become increasingly narrow. In the new media environment, science and technology journals, as special media, face new challenges. There is still a long way to go, especially in solving technical and content-related problems, which requires exploration by the distribution departments of science and technology journals. Furthermore, as the internet enters the big data era, using big data to expand the content of science and technology journals has become the general trend. However, the current technological development in this area is not yet mature, which will seriously hinder the integrated development of science and technology journals with new media technology.

2.1 Outdated Journal Development Concepts

After years of exploration and development, science and technology journals have gradually stabilized, with smooth and scientific operational processes and procedures, laying a solid foundation for timely publication. However, this stable operational model has also led to rigid thinking among editorial staff and stagnation in development concepts. In the new media era, some journals still rely on traditional email for soliciting contributions, and distribution depends solely on postal subscriptions. Editorial staff resist new work methods in the information age for soliciting, organizing, reviewing, editing, proofreading, and printing contributions, resulting in prolonged timelines from manuscript organization to publication and preventing readers from obtaining the latest journals in a timely manner, which greatly diminishes their reading experience. Additionally, publishing houses still position themselves from the perspective of public welfare units, paying insufficient attention to issues such as operational costs and profits, and investing relatively little funds in new media promotion, thereby seriously affecting the improvement of journal communication power.

2.2 Insufficient Journal Professionalism

Based on the implementation of the "Excellence Action Plan" for science and technology journals, the vast majority of selected journals are professional journals, indicating that science and technology journals must adopt a specialized development path based on market demand in future operations to better establish themselves in specialized fields. However, in actual operations, some science and technology journals suffer from insufficient specialization due to limitations in human resources, material resources, and professional expertise. These long-standing issues significantly affect journal quality. For example, in research in certain fields, there is little innovative content, with most being reprints of previously published research from other journals, resulting in overly repetitive and dull content with limited reference value. Moreover, some distribution departments of science and technology journals have not yet identified their market positioning, and their manuscript review and acceptance processes lack rigor when disseminating highly specialized research content, leading to the publication of submissions with insufficiently rigorous scientific content and inadequate journal professionalism. Journal distribution departments must pay sufficient attention to this issue; otherwise, they will likely be eliminated in market competition.

2.3 Limited Application of New Media Technology

Currently, China' s publishing and distribution industries have entered a fast track of development. In the new media era, journal operations face more uncertain factors. Although various distribution departments have launched electronic journals online, these electronic journals are not truly digital publications; they merely upload electronic versions of traditional print journals to academic websites such as Wanfang and CNKI or self-built websites for readers

to browse or download, mostly requiring payment and not yet achieving true sharing and free reading. Second, the communication methods of science and technology journals are relatively singular, failing to utilize new media technology to transform from one-way communication to interactive communication and from offline to online communication. Meanwhile, limited by technology and other factors, existing communication platforms are relatively backward, with slow update speeds for some journals, making platform communication innovation impossible. It can be said that in the new media era, science and technology journals still have a long way to go to achieve quality leaps, especially in solving technical and content-related challenges, which requires exploration by distribution departments.

2.4 Lagging Talent Team Construction

Whether traditional print media or new media, development cannot be separated from the support of high-quality talent, and competition among journals ultimately boils down to competition for talent. However, the current talent structure of science and technology journals is clearly unreasonable, with too many traditional media editors and insufficient talent in modern management, especially a severe shortage of high-end talent proficient in new media communication technology. The new media era has brought development opportunities for science and technology journals, but their transformation process urgently requires a large number of professional talents to undertake new media operations. Therefore, science and technology journals need to build a composite talent team that possesses both traditional journal business skills and mastery of new media technology and marketing concepts.

3. Strategies for Enhancing the Communication Influence of Science and Technology Journals in the New Media Era

Introducing the latest scientific and technological information and assuming social responsibility for science communication to further improve the market competitiveness of science and technology journals represents the exploration and development direction for these journals in the new media era. From the development trends of science and technology journals, using new media for communication is the general trend. Many science and technology journals have been exploring new development directions and have achieved certain results, which will inject new vitality into their development.

3.1 Reforming Journal Operational Concepts

The operational concepts of science and technology journals must advance with the times. Reforming operational concepts is key to enhancing the communication power of science and technology journals and an essential path to meeting the development needs of the new era. In response to the current situation of lagging operational concepts, the distribution departments of science and

technology journals must fully understand the development circumstances facing these journals and apply new media operational concepts to all aspects of distribution to effectively meet publication needs. First, the publication and distribution of science and technology journals must adhere to audience needs as the starting point, with the mission of "providing readable journals for audiences." The primary purpose of distributing science and technology journals is to disseminate cutting-edge scientific and technological achievements and use these achievements to drive improvements in scientific and technological levels. Therefore, distribution departments must thoroughly understand the diverse reading needs of audiences and use this understanding as the starting point for journal distribution, making the satisfaction of audience needs the overarching goal of journal development. Second, distribution departments must continuously explore new models for journal operations. In the new media era, journal operations face more uncertain factors, so distribution departments should establish regular communication systems to periodically discuss new problems and situations that arise in operations, share new ideas and methods for journal distribution, stimulate the creativity and enthusiasm of the entire journal operation team, and continuously promote the innovative development of science and technology journals.

3.2 Improving Journal Professionalism

First and foremost, professionalism must be enhanced. Compared with the print media era, audiences in the new media era have more choices, so science and technology journals must prioritize improving professionalism and win recognition from more readers by building a professional brand image. This is not only an effective way to improve journal content quality but also a powerful measure for science and technology journals to integrate into the new media operational environment, with extraordinary significance for enhancing their communication influence. To improve the professionalism of science and technology journals, quality must be the winning factor. Taking *National Science Review* as an example, this journal ranks among the top in global comprehensive journal evaluations, with a positioning of introducing important Chinese and foreign research achievements. Its distinctive columns—including in-depth interpretation of important science and technology policies and major events, and introductions of professional scholars and cutting-edge information—provide audiences with unique reading experiences. Meanwhile, the journal actively assumes the function of science and technology journals in disseminating scientific and technological information, with its content professionalism fully demonstrated. Other science and technology journals can learn from this magazine' s operational characteristics, strictly screen manuscripts, eliminate low-quality submissions, and effectively control content selection. Second, in terms of sales and operations, a brand-oriented operational mindset can be adopted, with the orientation of creating excellent journals, precise positioning, and better serving readers, making specialization the fundamental development strategy. Finally, science and technology journals must enhance service awareness, using internet

platforms to precisely push scientific and technological information to readers or leveraging the convenience advantages of networks to enable readers to receive cutting-edge research information in a timely manner. This is also an important measure for improving the operational professionalism of science and technology journals.

3.3 Promoting Communication with Big Data Thinking

The arrival of the new media era presents both challenges and opportunities for science and technology journals. First, in the new media era, science and technology journals must use big data to collect information, accurately understand audience demands, reading interests, and preferences for journals, and then edit journal manuscripts in a targeted manner to meet the diversified and personalized reading needs of audiences. Second, big data serves as a link for good interaction between science and technology journals and their audiences. Science and technology journals should rely on big data, especially the currently emerging cloud communication technology, to deeply mine data information about audiences and authors and clarify the relationship between them. This can not only achieve precise pushing of journal content and fully mobilize audience reading interest but also help break through development limitations caused by technological deficiencies.

3.4 Strengthening New Media Professional Team Building

As a communication medium at the forefront of the times showcasing the latest scientific and technological information, science and technology journals must build a professional talent team to improve their professionalism and continuously enhance communication influence. First, they must establish the concept of talent-driven journal development, increase talent introduction efforts, actively collaborate with major universities to recruit high-quality talents with bachelor' s degrees or above who are proficient in new media technology, and have them oversee new media operations and foreign language grammar. Second, they must adhere to the principle of making the best use of talents and fully leverage the role of existing personnel. Especially some senior editors and veteran staff in journal distribution departments, who are generally dedicated and highly skilled, have accumulated rich experience in manuscript review and solicitation. Going forward, their professional advantages should be fully utilized to ensure content quality. At the same time, regular or irregular business training should be provided to staff, inviting lecturers who are familiar with both new media technology and traditional journal distribution to give lectures to comprehensively improve the professional quality of existing employees. Finally, the functions of new media personnel should be redefined to build a professional team with skills in copywriting, platform operation, management development, and graphic design, cultivating a group of management personnel with innovative thinking, active minds, proficiency in network office software, and the ability to quickly adapt to new media communication needs, thereby providing

intellectual support for the integrated development of science and technology journals with new media.

In summary, the new media era has not only impacted the communication power of science and technology journals but also brought rare development opportunities. Facing these new development opportunities, science and technology journals must make timely adjustments, reform operational concepts, enrich journal content, innovate communication methods, and create high-quality excellent journals through scientific integration and efficient utilization of quality resources, thereby enhancing their communication influence.

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(Executive Editor: Zhang Xiaojing)

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