Editorial and Publishing Strategies for Scientific Journals in the Context of Media Convergence (Postprint)

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Abstract

Abstract

Objective: To analyze the transformation pathways of editing and publishing models for scientific journals within the context of media convergence, and to explore optimized strategies for enhancing both the dissemination capacity and academic impact of scientific journals.

Methods: Through case analysis, literature review, and theoretical investigation, this study systematically examines the influence of media convergence on content production, dissemination modalities, and user services of scientific journals, proposing optimization strategies grounded in practical experiences from representative domestic and international scientific journals.

Results: Media convergence propels scientific journals toward intelligent content production, diversified dissemination patterns, and precision-oriented user services, thereby establishing a novel editing and publishing paradigm centered on multimedia expression, multi-platform synergistic dissemination, and profound user engagement.

Conclusion: By reinforcing academic content quality, diversifying dissemination channels, and delivering personalized user services, the international communication capabilities and academic competitiveness of domestic scientific journals can be elevated, offering practical guidance and theoretical support for their high-quality development amid media convergence.

Full Text

Preamble

Editing and Publishing Strategies for Scientific Journals in the Context of Media Convergence

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Abstract: [**Objective**] This study analyzes the transformation pathways of editing and publishing models for scientific journals amid media convergence, exploring optimized strategies to enhance their dissemination capacity and academic influence. [**Methods**] Through case analysis, literature review, and theoretical discussion, this paper comprehensively examines the impact of media convergence on content production, dissemination methods, and user services for scientific journals. Drawing on practical experiences from representative domestic and international scientific journals, optimization strategies are proposed. [**Results**] Media convergence has propelled scientific journals toward intelligent content production, diversified dissemination models, and precision user services, forming a new editing and publishing paradigm centered on multimedia expression, multi-platform collaborative dissemination, and deep user interaction. [**Conclusion**] By strengthening academic content quality, diversifying communication channels, and personalizing user services, domestic scientific journals can enhance their international dissemination capabilities and academic competitiveness, providing practical guidance and theoretical support for high-quality development in the context of media convergence.

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Introduction

With the rapid development of digital technology, media convergence has become the mainstream trend in the global media industry [1], blurring the boundaries between traditional and emerging media and fundamentally transforming content production and dissemination methods [2]. In this context, scientific journals, as crucial carriers for disseminating academic achievements, face an urgent need for transformation and upgrading [3]. Traditional editing and publishing models can no longer meet readers' diverse and instantaneous demands, necessitating innovation in content forms, communication channels, and operational models through media convergence. In recent years, domestic and in-

ternational scientific journals have actively explored media convergence. For example, the *Journal of Traditional Chinese Medicine* has built a media convergence publishing matrix, utilizing various media forms to disseminate academic content and improve personalized user services [4]. However, scientific journals still face numerous challenges in this process, including imperfect management mechanisms, lagging talent development, and insufficient technology application. Therefore, in-depth research on the impact of media convergence on scientific journal editing and publishing models and the exploration of optimization strategies hold significant practical importance.

This study focuses on the following questions: What specific impacts does media convergence have on scientific journal editing and publishing models? What challenges and opportunities do scientific journals face during media convergence? How can innovative editing and publishing strategies enhance the dissemination capacity and influence of scientific journals in this context? By addressing these questions, this paper aims to provide theoretical support and practical guidance for the transformation and development of scientific journals.

1.1 Technology-Driven Transformation of Content Production

The rapid development of digital and intelligent technologies has injected new vitality into the reform of content production methods for scientific journals, driving traditional editing and publishing models toward full-process digitalization and intelligence [5]. This transformation covers all aspects from manuscript acquisition and editorial processing to publication and dissemination, fundamentally improving the efficiency and quality of content production.

1.1.1 Construction of Full-Process Digital Platforms The problems of low efficiency and high costs in traditional editing and publishing models have been significantly improved through digital technology empowerment. For example, the Shanghai University Press Journals Division has implemented a "convergence publishing + cluster construction" digital publishing strategy, establishing an integrated digital publishing system that consolidates manuscript management, editorial processing, and multi-channel distribution functions. This platform supports full-process online operations from submission to final publication, substantially shortening editorial cycles while ensuring the standardization and traceability of manuscript processing.

1.1.2 Artificial Intelligence Empowering Content Production The widespread application of artificial intelligence technology has further promoted intelligent content production. In the manuscript solicitation stage, AI-based topic planning systems help editors accurately identify high-impact topics by analyzing cutting-edge hotspots in academic fields through big data analytics. In the peer review stage, intelligent review tools such as Turnitin and iThenticate can quickly detect manuscript duplication and potential academic misconduct [6], saving time for editors and reviewers. Additionally, automated tools based

on natural language processing technology can generate high-quality article abstracts and provide support in grammar checking and language optimization, which is particularly important for international journals. For instance, top-tier journals like *Nature* employ machine learning algorithms to optimize submission workflows and intelligently track author behavior data, providing data support for service improvement and attracting high-level authors.

1.1.3 Diversification and Visualization of Content Forms Beyond traditional text content, data visualization and multimedia expression are becoming important directions for content production in scientific journals. For example, interactive charts, dynamic models, and video interpretations have been widely applied in academic journals. Some medical journals use three-dimensional visualization technology to display anatomical diagrams, providing readers with more intuitive academic experiences. This diversified content format not only enhances the readability and appeal of academic content but also meets the diverse needs of new-generation readers.

1.2 Diversification of Communication Models

The deepening development of media convergence has spawned multi-platform, multi-terminal, and multi-scenario communication demands, prompting increasingly diversified communication models for scientific journals [7]. Scientific journals are no longer limited to print publishing but have gradually built three-dimensional, networked, and socialized communication matrices.

1.2.1 Construction of Omni-Media Communication Matrices With the deepening of media convergence, scientific journals have achieved multi-platform content distribution by constructing omni-media communication matrices. For example, journals under the Shanghai University Press Journals Division have built official websites, WeChat public accounts, and Weibo accounts to interact with readers in real time. The official WeChat account not only pushes academic hotspots but also regularly hosts online special lectures, increasing engagement between journals and readers. Meanwhile, the rise of short-video platforms has provided new communication channels for scientific journals [8]. For instance, *Acta Scientiae Circumstantiae* publishes academic content interpretation videos on Douyin (TikTok), disseminating scientific knowledge to broader audiences in an accessible manner. This diversified communication format breaks the temporal and spatial limitations of traditional journal dissemination, attracting more young users to journals.

1.2.2 Personalized Precision Push and Real-Time Interaction Big data technology provides scientific journals with capabilities for precision push and real-time interaction [9]. By analyzing users' reading histories and behavioral preferences, journals can push customized academic content through WeChat or email. This personalized service not only improves user experience

but also significantly enhances content reading rates and dissemination effectiveness. Furthermore, the application of live streaming and interactive functions strengthens the connection between journals and readers. For example, some scientific journals host online conferences and academic forums, allowing readers to directly participate in academic exchanges. This interactive format not only enhances reader engagement but also supports journal brand building.

1.3 Profound Changes in User Demands

In the context of media convergence, users' reading habits and demands have undergone profound changes, exhibiting characteristics of personalization, fragmentation, and instantaneity [10]. These changes have not only affected content production for scientific journals but also placed higher demands on their communication models and service approaches.

1.3.1 Rise of Fragmented and Instantaneous Demands Modern users' accelerated life pace has made reading behavior more fragmented and instantaneous. The traditional scientific journal communication model centered on long academic papers can no longer meet users' needs for quickly obtaining information in short timeframes. Scientific journals address this by pushing short abstracts, highlight summaries, and dynamic visualization charts to condense complex content into concise and intuitive knowledge points. For example, *Acta Scientiae Circumstantiae* uses short videos and interactive charts to present key data and research conclusions from papers to users, significantly improving content dissemination efficiency and audience engagement.

1.3.2 Construction of Personalized Services Users' growing demand for personalized content requires scientific journals to provide precise content recommendation services. Based on big data and artificial intelligence technologies, journals can analyze users' reading behaviors and preferences to push academically relevant content. For instance, *Nature* uses its online platform to recommend the latest high-impact papers and thematic content based on users' disciplinary fields and research interests, helping them quickly access high-value information. Additionally, scientific journals are gradually adding thematic subscription and personalized setting functions, allowing users to subscribe to content updates on specific topics or research fields according to their needs. This user-choice-based content push approach not only enhances user experience but also further improves journals' academic service capabilities and user stickiness.

1.3.3 User Interaction and Community Building In the media convergence environment, users no longer passively receive information but want to participate in content dissemination and discussion. Scientific journals promote exchanges among users, authors, editors, and other readers by building interactive platforms. For example, some journals have opened comment and Q&A functions on their official websites, allowing users to directly express opinions

or ask questions about paper content, while authors can interact with readers through responses, enhancing the depth of academic discussion.

2. Optimization Strategies for Scientific Journal Editing and Publishing in the Context of Media Convergence

In the context of media convergence, the editing and publishing models of scientific journals require systematic optimization across content production, process and technology, communication and operation, and reader experience to improve academic quality and dissemination efficiency and adapt to the demands of the new era.

2.1 Content Production Optimization

Content quality remains the core competitiveness of scientific journals. In the context of media convergence, scientific journals need to further strengthen academic quality while exploring multimedia content expression to better meet readers' diverse demands. Journals should intensify efforts to screen and support high-quality academic content, ensuring authority and scientific rigor through strict peer review systems. For example, some top-tier journals have introduced a hybrid review mechanism of "double-blind review + expert recommendation" to enhance manuscript innovation and academic standards.

2.2 Process and Technology Innovation

Driven by media convergence, the digital and intelligent upgrading of editing and publishing processes has become a focus for optimizing scientific journals. By introducing big data and artificial intelligence technologies, journals can significantly improve editing efficiency, reduce publishing costs, and accelerate academic content dissemination. Big data technology enables journals to make scientific decisions based on massive datasets. For example, by analyzing data such as contributors' research field distribution and paper citation rates, editors can more accurately select topics and column settings that align with academic hotspots and frontiers. Additionally, big data can help journals identify potential high-impact authors for key support.

2.3 Communication and Operation Model Transformation

Media convergence requires scientific journals to undergo profound transformation in communication and operation models, building a multi-platform collaborative communication system to meet the dissemination needs of different terminals and scenarios. Scientific journals need to expand beyond traditional print media to more communication channels, such as official websites, mobile applications, WeChat public accounts, Weibo, and short-video platforms. For example, *Nature* links its official website with social media platforms, converting core content of key papers into short videos or brief tweets, substantially increasing journal exposure and influence.

2.4 Personalized Enhancement of Reader Experience

Against the backdrop of increasingly personalized user demands, scientific journals need to optimize user experience and improve content dissemination effectiveness through data feedback and intelligent recommendation mechanisms. By tracking users' browsing behaviors, download records, and interaction data, journals can build comprehensive user profiles to understand the interest preferences of different reader groups. For example, some online journal platforms regularly push new papers or academic news in relevant fields based on users' reading histories. Furthermore, personalized recommendation algorithms can help journals provide customized content services for users from different disciplines, regions, and professional backgrounds.

3. Case Studies

In the context of media convergence, domestic and international scientific journals have actively explored the optimization of editing and publishing strategies. The following analysis examines successful practices in content optimization and communication model transformation by domestic journals through typical cases, while comparing and extracting advanced experiences from international top-tier scientific journals.

3.1 Domestic Typical Scientific Journal Cases

3.1.1 *Chinese Journal of Traditional Chinese Medicine*: Building a Media Convergence Publishing Matrix The *Chinese Journal of Traditional Chinese Medicine* has achieved remarkable results in content optimization and communication model transformation. By constructing a media convergence publishing matrix that integrates print media, official websites, and WeChat public accounts, the journal has formed an integrated communication network. In content production, the journal delves deeply into the field of traditional Chinese medicine, combining professional research findings to enhance the depth and authority of academic content.

3.1.2 *Acta Scientiae Circumstantiae*: Advancing Data Visualization and Precision Dissemination *Acta Scientiae Circumstantiae* focuses on optimizing academic content expression through data visualization technology in the context of media convergence. For example, in research on pollution control and ecological protection, the journal uses dynamic charts and interactive maps to visually display complex experimental data and research results. This innovative format not only improves content dissemination effectiveness but also attracts more readers from interdisciplinary fields. In terms of communication, the journal has vigorously developed a multi-platform publishing model, opening multiple social media accounts in addition to its official website. Particularly on environmental protection theme days, the journal attracts large numbers of public and professional users through thematic pushes and popular science con-

tent releases. This "academic dissemination + social service" model effectively broadens the journal's audience scope and enhances its social influence.

3.2 Comparison with International Top Scientific Journals

3.2.1 *Nature*: Promoting Multimedia Content Expression As an international top-tier scientific journal, *Nature*'s innovations in content production and communication are worth learning from. In content production, *Nature* not only emphasizes high-quality academic content but also vigorously develops multimedia expression forms. For example, through video interpretations, dynamic data charts, and interactive models, the journal provides readers with more intuitive academic experiences. Additionally, *Nature* has dedicated editorial teams producing popular science content that transforms complex research findings into accessible information, helping non-specialist readers understand scientific knowledge. In communication, *Nature* relies on a powerful digital platform, integrating official websites, social media, and email subscription systems to build an omni-media communication matrix. Meanwhile, its website supports personalized recommendation functions, pushing relevant content based on users' browsing histories and interest preferences, substantially improving user stickiness and content dissemination efficiency.

3.2.2 *Science*: Building a Global Academic Community *Science* has built a global academic community through its unique communication strategy. In content production, *Science* emphasizes cross-disciplinary topic planning, particularly research involving social hotspots and scientific frontiers, greatly enhancing the journal's international influence. In communication, *Science* promotes academic exchanges through hosting global online forums and seminars. For example, its regularly held "Science Talk" events invite paper authors to interact with global readers in real time. This communication model not only expands the journal's audience but also establishes a tighter academic exchange network. Additionally, *Science* promotes the globalization of research findings through multi-language platforms, providing more convenient academic access for scholars from non-English-speaking countries.

3.3 Case Implications

Analysis of typical domestic and international scientific journals reveals that diversification of content production, multi-platform communication, and deepened user interaction are key strategies for enhancing journal competitiveness in the context of media convergence. Domestic scientific journals can learn from *Nature*'s multimedia content expression forms—for example, using video interpretations, interactive charts, and visualization tools to transform complex academic content into more intuitive and understandable presentations to attract more readers and improve dissemination effectiveness. Simultaneously, they can learn from *Science*'s experience in building a global academic community by expanding international influence through multi-language platforms and

cross-cultural communication activities, promoting the globalization of domestic research findings.

Furthermore, domestic scientific journals need to pay greater attention to interaction with audiences, enhancing participation in academic exchanges through live streaming, online forums, and other formats. By introducing personalized recommendation algorithms and data analysis technologies, journals can precisely meet the needs of different academic groups and improve user experience and stickiness. In summary, by strengthening content quality, innovating communication forms, and optimizing user services, domestic scientific journals can achieve high-quality development in the context of media convergence and compete alongside international top-tier journals on the stage of academic dissemination.

The rapid development of media convergence has brought profound transformation opportunities to scientific journals while also presenting new challenges. Through the deep application of digital technology and intelligent means, scientific journals have achieved remarkable results in content production, communication methods, and user services. From the successful practices of domestic journals like the *Chinese Journal of Traditional Chinese Medicine* and *Acta Scientiae Circumstantiae* to the advanced experiences of international top-tier journals like *Nature* and *Science*, we can clearly see that multimedia expression, multi-platform dissemination, and deepened user interaction are key pathways to enhancing core journal competitiveness. In the future, scientific journals need to continue deepening media convergence practices, leveraging cutting-edge technologies such as artificial intelligence and big data analytics to promote comprehensive upgrades in academic content production and dissemination. Simultaneously, by building global academic networks, optimizing user experiences, and expanding international influence, domestic scientific journals can further narrow the gap with international top-tier journals, achieve high-quality development, and provide strong support for the global dissemination of academic achievements and knowledge innovation.

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