Technological Innovation Empowering Digital Publishing Service Platform Construction Post-Print

Authors: Shi Guangfeng

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

Abstract

【Purpose】 China' s deep integrated development of publishing has achieved remarkable results, moving one step closer to the goal of building a publishing powerhouse. In the digital era, technology empowerment represents the direction for supply-side reform in the future publishing industry and for enhancing international operational capabilities, while the new publishing service system still requires improvement. 【Method】 This article explores the characteristics of new digital publishing modalities from an industrial chain perspective, as well as the practical applications of new-generation information technologies such as cloud computing, big data, and artificial intelligence in the field of digital publishing platforms. 【Result】 The construction of digital publishing service platforms facilitates the aggregation and delivery of high-quality digital publishing content, providing quality and convenient services to the public. 【Conclusion】 Digital publishing service platforms should address the diversified needs of the public, collaborate with partners such as technology service providers, content processors, and channel distributors to enhance business capabilities, expand deep linkages with the real economy, and build smart-flow digital publishing platforms with strong competitiveness and refined services.

Full Text

Title: Building Digital Publishing Service Platforms Empowered by Scientific and Technological Innovation

(Hebei Academy of Social Sciences, Economic Forum* Magazine, Shijiazhuang, Hebei 052100)*

Abstract

[**Objective**] China's deep integration development in publishing has achieved remarkable results, bringing the nation closer to its goal of becoming a publishing powerhouse. In the digital era, technology empowerment represents the direction for future supply-side reform in the publishing industry and for enhancing international operational capabilities, yet new publishing service systems remain to be perfected. [**Method**] This article examines the characteristics of new digital publishing modalities from an industry chain perspective, as well as the practical applications of next-generation information technologies such as cloud computing, big data, and artificial intelligence in the digital publishing platform domain. [**Result**] The construction of digital publishing service platforms helps aggregate and deliver high-quality digital publishing content, providing the public with superior and convenient services. [**Conclusion**] Digital publishing service platforms should address the diversified needs of the public, collaborating with technology service providers, content processors, channel distributors, and other partners to enhance business capabilities, expand deep linkages with the real economy, and build smart-flow digital publishing platforms with strong competitiveness and refined services.

Keywords: digital publishing; scientific and technological innovation; smart platform; deep media integration

Classification Code: G230

Document Code: A

Article ID: 1671-0134(2023)06-136-05

DOI: 10.19483/j.cnki.11-4653/n.2023.06.029

Citation Format: Shi Guangfeng. Building Digital Publishing Service Platforms Empowered by Scientific and Technological Innovation [J]. China Media Technology, 2023(06): 136-140.

1. Problem Statement

Digital technology, through its integration with published works to create digital publishing products, possesses inherent advantages such as broad coverage, high service levels, low costs, and low industry barriers, which can more effectively promote inclusive development of content dissemination. In 2016, digital publishing was first included in the national 13th Five-Year Development Plan. As the wave of the fourth technological revolution arrives, virtual platforms are expanding into new territories, and the publishing industry continues to transform in terms of concepts, organizational models, content production, and marketing approaches. Digital reading has undergone changes toward intelligence, contextualization, and community-based experiences, with product innovation and platform innovation representing future trends in digital publishing development. According to the "China Digital Publishing Industry Annual

Report 2021-2022," in 2021, China' s digital publishing industry reached a scale of 12,762.64 billion yuan, representing an 8.33% year-over-year increase. The digital publishing industry' s business models are becoming increasingly diversified, with output value rising steadily, particularly in sectors such as electronic journals, online literature, online education, internet advertising, and digital music, which have shown rapid growth momentum. According to National Bureau of Statistics data, in 2022, the revenue of national-scale digital publishing enterprises increased by 30.3% compared to the previous year, demonstrating strong economic resilience.

Digital technology focuses on content production, platform application, marketing, publishing protection, and intelligent transactions, using more modern and information-based communication systems to enhance the connectivity among participating entities, breaking the pattern of decentralized operations between traditional publishing and other industries, and incubating a whole-industry-chain operational economic network that ensures rapid information dissemination while balancing benefit distribution, thereby driving the continuous outward expansion of the real economy network. It can be said that the deep integration function of digital publishing has become a driver for the integrated development of culture, technology, and economy, as well as a major platform for global connectivity. The cultural subsystem absorbs and internalizes political, economic, and technological subsystems through nonlinear coherent effects, thereby promoting the advanced and orderly development of digital publishing. Additionally, different models of digital publishing platforms enable effective market competition in the digital publishing field, which is also an inevitable requirement for the healthy development of the digital publishing market. Strengthening the construction of digital publishing service platforms helps aggregate and deliver high-quality digital publishing content, providing the public with quality and convenient services, promoting the upgrading of publishing communication technology, and ultimately comprehensively enhancing the competitiveness of digital publishing.

2. Digital Publishing Reshapes the Industry Chain' s New Modalities

The essence of the digital publishing industry chain has not changed, but digital technology has been integrated into the content industry to jointly support the publishing market, with its proportion increasing. From transforming product forms and updating operational models to improving service quality, the digital transformation of the publishing industry has brought higher, more sustained, stable, and growth-oriented benefits to the publishing market. The tighter the industry chain, the higher the efficiency of resource allocation, the more obvious the scale effects of industrial agglomeration, and the stronger the expansion capacity of the publishing industry.

2.1 Front-End: Digital Content Development

In content development, content providers and technology providers maintain both competitive and cooperative relationships. The publishing industry needs to leverage digital technology from tech companies to analyze consumer preferences in order to provide high-quality content. Technology companies process original content through technical means, transforming it into new forms such as information flows, providing output platforms for them while using new products to demonstrate technological value. With content 加持, these digital platforms can avoid becoming empty shells. Today, the publishing industry has achieved significant changes in business models and commercial patterns through digital transformation. The focus of digital transformation is not merely formal transformation; more importantly, viewing products and services through a digital lens and wisdom can create unlimited business opportunities and new business formats.

The digital transformation of the publishing industry is mainly manifested in two aspects: First is innovation in form. Not only are publications no longer limited to tangible entities, but various new forms of digital publications are gradually occupying the market. E-books, digital albums, mobile games, and others have become commonplace, with many publishing entities also shifting to virtual platforms. Online bookstores provide convenience to consumers while attracting customers. Second is conceptual innovation. The sources of digital publications are no longer just traditional publishers but also come from major social media platforms, with diverse types of works. The digital market has seen more original content emerge, and under compliant conditions, works in various forms including text, voice, and video can apply for publication, contributing to a flourishing publishing market landscape. The realization of optimized resource allocation has transformed what previously required many resources to produce a single book into a virtual compressed package. E-books written with simple code require minimal storage space and cost very little money to enjoy the pleasure of reading. Digitalization of content development empowers the publishing industry' s development, not only improving production speed and quality but also stimulating innovation vitality in the field and continuously achieving product function diversification.

Digital publishing products have the following characteristics: (1) Diverse product functions. A single product' s functions are no longer limited to just reading books but can also include online transmission, sharing, and receiving emails. Consumers face multiple choices and can select according to their needs. Whether a product' s functions are comprehensive is not as important as whether it can meet consumer needs. Only on the basis of matching functional needs will consumers have higher requirements for product performance. (2) Accelerated product iteration. For profitability, enterprises continuously develop new products to enhance competitiveness. After new products are launched, software requires continuous iterative upgrades, sometimes completed in just minutes. This immediacy of renewal promotes rapid industry development. (3)

Content superposition and value-added. Upgraded digital publications must give people a sense of "value beyond cost" ; otherwise, there is no reason to replace existing products. Many educational institutions have applied this principle, adding video content and courseware that are difficult to present in text when selling e-books, thereby achieving value-added digital books. Facts prove that even when such products are sometimes priced higher than paper books, consumers' willingness to pay is extremely high because they are not just buying books but also enjoying multiple functional uses.

Digital Publishing Main Product Forms and Characteristics

No.	Product Form	Characteristics
1	E-book	Easy to obtain and carry, convenient content retrieval; large capacity, saves space occupied by paper books; reduces book costs, inexpensive; saves paper, environmentally friendly and low-carbon
2	E-magazine	Low price or even free, large reading group; easy to query, users can quickly find needed content; low investment and high return for producers, reduces promotion costs while increasing effectiveness; rich content forms with sound, images, and video
5	Digital Music	Abandons physical carriers; fast dissemination speed; no loss of sound quality

2.2 Middle-End: Digital Operations and Channels

The Internet of Things effectively connects products, services, and customers, representing a digitalization approach. Using new thinking, methods, and tools achieves co-creation between products and users. Meanwhile, consumers' enthusiasm for online communication is high, and they are skilled at using digital platforms to provide feedback on products and services. High-quality service reviews automatically generate positive word-of-mouth for platforms and suppliers, requiring digital distributors and content providers to jointly integrate real consumer opinions in a timely manner, actively involving consumers in the construction of the industrial value chain to achieve "interactive marketing" effects.

The popularity of social media platforms such as Weibo, Instagram, and TikTok has created user market traffic pools. If enhancing user participation in evalua-

tion systems represents the first step in digital terminal system innovation, then enhancing users' sense of gain truly leverages the advantages of digital operations in the publishing industry. Users are the most active part of the global information chain, and stabilizing user stickiness has become one of the core strategies for dominating market communication and promotion. Soft advertisements placed in traffic pools attract more new users, and driven by interests, honor, and social interaction, users inadvertently become product promoters, leveraging their sharing power, diffusion power, and conversion power.

In terms of sales costs, transaction costs, and information search cost control, technological progress holds absolute advantages. The popularization of the Internet facilitates keeping communication and circulation costs within reasonable ranges and uses "FAQ" (Frequently Asked Questions) methods to reduce service costs. In the rapidly growing academic journal digital publishing market, platform competition has led to lower prices for academic content, improving accessibility. Digital operation management effectively reduces the probability of duplicate output and error rates in manual office work. Publishing product operations constitute a massive component. Traditional data analysis relied on manual processing, which was not only time-consuming and labor-intensive but also prone to analysis in wrong directions, leading to incorrect market judgments. Today, with intelligent data analysis tools, systems can automatically capture important data from websites and forums by locking in keywords, then run automatic recognition and simulation steps to derive industry development patterns and conclusions, which are then presented using visualization tools such as common charts to facilitate decision-makers' judgments. Analyzing massive data to make decisions achieves much higher efficiency and accuracy compared to traditional data analysis methods.

3. Main Functions and Characteristics of Digital Publishing Service Platforms

Digital publishing platforms are not physical entities; they are based on industrial connotations, providing multiple open virtual venues for direct producers and peripheral service providers, encompassing the entire production, dissemination, social interaction, transaction, consumption, and management chain.

3.1 Digital Network Management System Refines Industrial Ecology Modules

Digital platforms conduct user behavior analysis through data compilation of registration, login, browsing, and downloads, tracking hot topics, current situations, and development trends across various industries. Using hot topics and innovation points in certain fields as references for content selection, creativity, and compilation. In digital network management systems, based on functions such as digital technology research and development and implementation, interactive information processing and connectivity, and electronic settlement and

payment, platform administrators modularize each component into more detailed sub-module grids, with more different stakeholders assuming corresponding functions to form an interconnected industrial network with vertical and horizontal linkages.

Publishing content relies on carriers and channels to reach consumers, with smart devices providing better scenario experiences and multiple consumption paths. As more digital content and devices flood into people' s lives, the general public' s knowledge has broadened, and expectations for products and services have increased. Suppliers compete for market share by providing higher-quality products and services, making competition increasingly fierce. Listening to users' voices has gained importance, with various online services flourishing and network platforms facilitating access to user evaluations and customer contact. Conversely, consumers have gained higher autonomy. Digital consumers no longer passively accept enterprise services; facing dazzling products in the market, they are skilled at gathering comprehensive supplier rating information and pursuing higher-quality products and services. Design thinking agility and data fluency have become new digital transformation methodologies. When products are not digital, they can also be transformed through [Figure 1: see original paper] Digital Technology Reshapes New Modalities of the Publishing Industry Chain.

3.2 Changing Demand Structures Pose New Requirements for Business Models

Digital publishing platforms feature "resource aggregation, demand matching, and value enhancement," with content creation at the core to build relationship and service networks. Against the backdrop of digital publishing, the public has higher expectations for service levels and communication interaction. Providing users with contextualized knowledge services, knowledge platforms must transition from free to paid models. Digital publishing service platforms establish an effective connection system between users and information, breaking through spatial environments, achieving multi-scenario coverage and real-time interaction, enhancing content extensibility and integrity according to scenarios, and permeating lifestyles. Using different scenarios to meet user needs gradually cultivates users' consumption habits of paying for high-quality content and valuable knowledge, promoting the transformation from "weak relationships" (readers) to "strong relationships" (users).

3.3 Providing Diversified, Integrated, and Intensive Services

Digital publishing service platforms integrate diverse functions such as digital publishing, information data management and development, digital marketing, network operations, financial (payment) services, and advertising operations, and possess social media functions, forming a relatively direct and effective communication situation where business interactions and interpersonal interactions occur in community interactions. Digital publishing service platforms include

compilation systems, editing systems, information management, and copyright management systems, promoting multi-point interaction among editors, authors, and readers. Under this service framework, they can create independently or further deepen exchanges and cooperation with author groups and journal groups. The network communities connected by digital publishing sharing platforms promote deep interaction between platforms and users, allowing users to directly participate in content creation and service improvement processes, making the content and forms presented by platforms more aligned with diversified and personalized user needs, laying a foundation for the construction and long-term development of digital publishing platforms and injecting fresh vitality.

4. Technology Empowering the Construction of Comprehensive Digital Publishing Service Platforms

4.1 Focusing on Product Innovation to Build a Platform for High-Quality Content Development

Content resources are the core of the publishing industry, whether traditional or digital. First, combining big data, artificial intelligence algorithms, cloud computing, and other next-generation information technologies, intelligent search functions can draw user portraits and construct knowledge graphs of text, images, audio, and video to improve topic selection and content planning efficiency, designing original products that better align with market demands and product development trends in the attention economy era. Second, building resource channel sharing and open aggregation business collaboration platforms, establishing a publishing cooperation model driven by technological innovation and collective wisdom, leveraging advanced technologies and diverse content elements to increase the technological content of content products, effectively aggregating multi-party cooperation resources, creating new product forms and templates, and establishing new paradigms for industry technology construction. Third, providing trial operation channels for technology-publishing integration products. As data resources become important production factors, their proportion in content production increases, substantially adjusting the structure of digital publishing products, further releasing scientific and technological content productivity, promoting the landing and transformation of new products, establishing new product user feedback mechanisms, and improving the conversion rate of high-quality products.

4.2 Using Media Convergence as a Path to Build Diversified and Characteristic Communication Platforms

In the new media era, publishing entities must clarify their audience positioning and create high-quality content targeted at specific groups to maintain their authority and influence. First, expand characteristic communication channels, focusing on achieving an "aggregation effect."This requires continuing to expand external channels for integrated media development, building a diversified com-

munication platform of "one network, two micros, and multiple terminals," forming a multi-dimensional, integrated development communication system. Second, conduct deep integration at multiple levels including strategic deployment, operational management, and communication methods, using the latest information technology to achieve rapid information processing and multi-channel release, conveniently and efficiently completing information sharing, business connection, and interactive collaboration. Based on different industries and life scenarios of service objects, efficiently couple high-quality content with precise traffic to meet the needs of the public, especially high-end groups, provide customized services for clients, and offer different forms of communication platforms and exchange positions for publishing dissemination based on the production process elements of digital products. Third, cultivate a professional team for digital publishing platform construction. New media has typical cross-industry characteristics, integrating information technology, news communication, film and television arts, marketing, and other specialties, requiring highly composite professional qualities from practitioners. Talent is the primary productive force determining the survival of media. Absorb high-quality talent from outside the enterprise and cultivate professionals internally, implementing both approaches simultaneously to build a team of comprehensive media communication talents who can perform multiple roles and integrate "collection, editing, and broadcasting." Promote the upgrading of integrated media center construction, accelerate the cultivation of first-class new media professionals, and create a series of large-scale integrated reporting products, light application products, and creative news products to fully release the creativity and communication power of digital publishing service platforms.

4.3 Using Technology Application as a Foundation to Build Platforms with Excellent Interest and Experience

Integrating next-generation information technologies such as AI, IoT, and big data centers to establish a real-time interactive and visualized big data platform. First, fully mobilize user initiative to form linkages between users and platforms, brands, environments, and services. Communication between users and platforms is two-way; users can provide reader feedback on the platform while also sharing content to their social platforms such as Weibo and WeChat Moments, forming community marketing effects and achieving benign cyclic communication. Meanwhile, users can choose to add their own insights to form new content. This interactive sharing and fragmented reading model completes an upgrade process of creation, dissemination, extension, and re-creation. Second, fully utilize interactive virtual technology to comprehensively, multi-dimensionally, and stereoscopically refresh user experiences. Using technologies such as panoramic views, VR, AI, human-computer interaction, and audio technology, interconnection is generated in the computer language environment through changes in users' visual, auditory, and other senses, allowing users to form interactions with products. Assisted by smart wearable devices, emotional techniques are better expressed through digital technology, creating an immersive environment with

sound and emotion for users, providing a strong sense of presence and immersion. Third, fully leverage the role of "creative design + brand publishing" to create impressive IPs. Tell the historical stories and cultural heritage behind products well, endowing products with more value from aspects such as topic selection, planning, packaging, and marketing. Ideas can also be gathered broadly by publishing "creative solicitation orders" on digital publishing service platforms, allowing the creative vitality of the public to give new life to digital publishing.

4.4 Using Service Optimization as a Goal to Build Refined Operation User Services

Based on the "user-centered" concept, using data mining and data analysis technologies to fully explore user habits and predict user needs, focusing tightly on "people" to provide more precise and personalized content services. First, adopt digital twin technology to achieve transparent and information-based applications, effectively reducing management radius and shortening response time, thereby improving data reading and management efficiency, which plays a supporting role in platform construction and also meets user needs. Users can use platform data visualization analysis to quickly understand the overall situation in a certain field and accurately match their own needs, improving service effectiveness. Second, improve the copyright protection mechanism of digital publishing platforms to effectively protect users' legitimate rights and interests. Digital products are born relying on information technology, and the phenomenon of digital product resources being copied and disseminated is widespread. Many criminals blindly distribute pirated products for economic benefits, causing market disorder. The copyright protection awareness in the digital publishing industry is growing stronger, and digital resources can be protected through code encryption, digital watermarking, identity authentication, and other methods. Promoting the integration of technological innovation and copyright protection is an inevitable choice for the digital publishing industry, which should accelerate the integrated development of "blockchain + copyright chain," using blockchain technology to upload data to the cloud for preservation, protecting the rights of authors and users, preventing information tampering, and guarding against risks of evidence damage or loss. Third, provide diversified services for users with different needs. From user portraits to tag systems, from behavior maps to operation strategies, the refined operation process is a continuously dynamic correction process influenced by data changes. It requires analysis of user habits such as platform login frequency, weekly duration, and entry points, establishing a clear user growth system, using backend settings to allow users to automatically trigger service models that meet their own needs, and continuously improving through a "perfect-feedback-perfect" mechanism to provide users with diversified demand services.

References

[1] Li Lihua. Digital Reading Changes and Digital Publishing Innovation Under the Background of Integrated Development [J]. Publishing Science, 2022(5): 80-85.

[2] Sun Lin, Deng Tianqi. Blockchain Empowering Digital Publishing: Logical Coupling, Technical Application, and Risk Examination [J]. Digital Library Forum, 2022(12): 54-60.

[3] Liu Binjie: Digital Publishing is a Major Platform for the Integration of Culture, Technology, and Economy [J]. Public Relations World, 2023(1): 14-15.

[4] Zhang Xinxin, Ding Jingjia. Exploration and Efforts in Constructing an Independent Knowledge System for Digital Publishing—A Review of Digital Publishing Research in China in 2022 [J]. Technology and Publishing: 2023: 1-11.

[5] Zhao Wenyi. Research on the Crowdfunding Model for Academic Journal Digital Publishing [J]. Publishing and Distribution Research, 2017(2): 56-58.

[6] Cui Hengyong, Fan Qinru. Analysis of Digital Publishing Platforms and Big Data Structure [J]. Publishing and Distribution Research, 2014(4): 9-12.

[7] Wang Jun. Digital Publishing Platform: Concept, Essence, and Basic Functions [J]. Publishing and Distribution Research, 2017(3): 11-15+10.

[8] Xu Rui. Construction and Operation Model of Digital Publishing Sharing Platform [J]. China Publishing, 2018(1): 40-44.

[9] Zhang Meijuan, Yu Qianwen, Li Ang. Third-Party Digital Publishing Platforms: Connotation, Models, and Optimization [J]. Publishing Science, 2020(6): 12-18.

[10] Mao Jinghui. Focusing on Multi-Dimensional Integration to Build a Characteristic Think Tank-Type Integrated Media Platform [N/OL]. China Economic Times, https://www.sohu.com/a/357165388_{115495}. 2019-11-29/2023-04-08.

[11] Shi Jiayi, Cheng Fandi, Chen Meizhen. Research on the Design of Online Experience Hall for Huzhou Brushes Based on Digital Publishing Platform [J]. Collection, Writing, and Editing, 2021(8): 128-129.

[12] Gao Shang. Construction and Reflection on Open Platforms for Digital Publishing Industry in the New Era [J]. Occupation, 2017(15): 19-20.

[13] Zhang Mei, Weng Zhihui, Lin Haiqing. Research on the Construction of Integrated Digital Publishing Platform for Scientific Journals [J]. Publishing Wide Angle, 2021(21): 62-64+87.

[14] Sun Yuhui. Exploration of User Refined Operation Based on Integrated Publishing [J]. Publisher, 2021(6): 46-47.

Author Profile: Shi Guangfeng (1972-), male, from Shijiazhuang, Hebei, Ph.D., President and Editor-in-Chief of Economic Forum Magazine, Hebei Academy of Social Sciences, research interests in tourism management and press and publishing.

(Responsible Editor: Li Jing)

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