

## Research on the Application of New Technologies in the Publishing Industry: Postprint

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### Abstract

In the context of the new era, China's economic construction and scientific-technological development have achieved new accomplishments. Particularly with the emergence and development of self-media, the traditional publishing industry has encountered new challenges while also facing numerous new development opportunities. The application of new computer technologies to the publishing industry constitutes a key factor in promoting its development in the new era. At present, the principal new technologies include computer typesetting technology, multimedia publishing technology, and network publishing technology, among which digital publishing—a component of network publishing technology—is extensively utilized in the editing and publishing industry in the new era. Moreover, as the most advanced frontiers of computer technology, artificial intelligence technology, big data technology, and AR interactive technology hold significant implications for the future development of the editing and publishing industry. This study examines the current major new publishing technologies and their modes of application, and analyzes the future development direction of the editing and publishing industry under the backdrop of these new technologies.

### Full Text

## Research on the Application of New Technologies in the Publishing Industry

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**Abstract:** In the new era, China's economic construction and scientific and technological development have achieved new accomplishments. Particularly with the emergence and development of self-media, the traditional publishing industry faces new challenges alongside numerous development opportunities.

Applying new computer technologies to the publishing industry represents the key to promoting its development in this new era. Currently, the main new technologies include computer layout technology, multimedia publishing technology, and network publishing technology, among which digital publishing within network publishing is widely utilized in the editing and publishing industry. Furthermore, as the most cutting-edge computer technologies—artificial intelligence, big data, and AR interaction technologies—hold significant meaning for the future development of the editing and publishing industry. This paper examines the current major publishing technologies and their application methods, and analyzes the future development direction of the editing and publishing industry against the backdrop of these new technologies.

**Keywords:** Digital Publishing; Computer Layout; Artificial Intelligence; Big Data; AR Interaction; Publishing Technology

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With the rapid development of computer technology and new media technology, the publishing industry has undergone a series of major transformations. In recent years, whether through the swift rise of short-video self-media platforms or the widespread application of cutting-edge computer technologies such as artificial intelligence and big data, the publishing industry has experienced new impacts while also encountering unprecedented opportunities. In this context, a critical question for publishing professionals is how to apply these new technologies to the editing and publishing industry to drive its development, achieve structural and technological transformation, and align the industry with social and epochal trends.

## 1. Content of New Publishing Technologies

The publishing industry lacks a systematic and clear definition of “new technologies” due to its considerable flexibility and particularity—most technologies can be applied to editing, printing, and distribution, with these technologies forming new models and exerting different effects that variously impact the industry. This paper focuses primarily on computer layout technology, multimedia publishing technology, and network publishing, which are currently the most frequently applied and effective technologies in the editing and publishing industry and represent the main entry points for future technological breakthroughs. Additionally, the paper briefly introduces new technology applications in printing and distribution.

## 1.1 Computer Layout Technology

Computer layout technology has fundamentally transformed traditional editing and publishing workflows, significantly streamlining the process and reducing the probability of errors during editing and review. In traditional publishing, layout, design, and editing were typically handled by different departments and personnel following established procedures, requiring substantial time and effort for handovers and communication. Computer layout technology, leveraging the powerful capabilities of computer office software, enables a minimal staff to complete the entire layout, design, and editing workflow. This approach eliminates the time spent circulating manuscripts among internal staff and removes the need for every worker to annotate and modify each manuscript, substantially improving the efficiency and accuracy of layout, design, and editing while reducing manuscript comprehension deviations caused by interdepartmental transfers that could compromise quality. Furthermore, computer layout technology enables intuitive visualization of editing effects, allowing publishing editors to inspect layout and editing quality from a holistic page layout and overall design perspective before delivery for review, after which direct layout proofing and printing can proceed. This technology not only saves time in the publishing process and enhances editing and publishing efficiency but also achieves holistic manuscript control, reducing discrepancies between manuscripts and actual designs caused by ambiguous communication during circulation, thereby improving editing and publishing quality [?].

## 1.2 Multimedia Publishing

Multimedia publishing constitutes an important component of the current editing and publishing industry. Beyond traditional paper book publishing and electronic journal publishing, various publishing houses have vigorously developed multimedia content publishing based on new media technology platforms, including integrated audio-video publishing, interactive graphic and image design, and digital content transmission. Multimedia publishing possesses the integrated advantages of convergence, interactivity, and digitization. Convergence refers to the processing and organic combination of information such as video, text, and music to achieve real-time compression, collection, and decompression of dynamic audio and video information, making publications richly illustrated and vivid. Interactivity means readers can communicate and interact with computer network systems through multiple channels, enabling control and selection of data information. Digitization indicates that data information can be stored digitally to facilitate publication storage and transmission, making distribution and promotion more effective. The editing of multimedia publications is more complex than book editing, and the review process is more stringent, necessitating higher professional knowledge and editorial competence among related editorial staff.

### 1.3 Network Publishing

Network publishing represents a popular focus in the current editing and publishing industry and the primary direction for future development. Traditional network publishing referred simply to electronic newspapers and books or the simultaneous publication of e-books alongside paper publications—the online novel industry that once swept the internet exemplified this model. However, as times progress and science and technology continue to develop, novels alone have gradually failed to satisfy consumer demands for the publishing industry, making digital network publishing a new trend and direction for development.

Digital publishing is an emerging publishing industry that has developed by integrating and surpassing traditional publishing content, built upon multiple advanced technological means including computer technology, communication technology, network technology, streaming media technology, storage technology, and display technology. The primary difference between digital publishing and traditional publishing lies in the fact that digital publishing stores all editing and publishing information in binary form on computer discs and hard drives, with information processing and reception conducted through computers or terminal devices. Digital publishing manifests digitization in four aspects: digitalized production models and operational processes, wherein publishing and promotion operations occur via the internet without physical characteristics; digitalized content, which is no longer limited to traditional graphic newspapers and periodicals but, due to digital publishing's considerable compatibility, encompasses the entire spectrum of consumer needs, whether books and periodicals, audio and video, or images and graphics; digitalized transmission carriers, wherein digital publishing products are disseminated through internet pathways and carriers, accessible via both traditional PC terminals and the increasingly popular mobile terminals.

### 1.4 New Technology Applications in the Printing Industry

As the usage cycles of daily products become shorter and update frequencies accelerate, new-era social development demands that the publishing industry adopt new printing technologies, such as label printing, code-spray printing, and printing for specific requirements in digital printing. Additionally, the printing industry's adoption of new technologies enables products to achieve uniqueness and distinctive personalities while realizing unified design across different regions and distributed printing. The printing industry's adoption of motor-driven wheel technology substantially reduces printing time and maximally ensures product quality.

### 1.5 New Technology Applications in the Distribution Industry

China's publishing industry development has become interdependent with internet publishing and big data publishing, transforming people's reading habits. Consequently, the publishing distribution industry must keep pace with the

times. In the new era, by applying internet knowledge services, the industry can transform from distributing books to distributing knowledge, providing not only basic products but also services that expand distribution markets and transform traditional business concepts. Using physical stores as a foundation to conduct online and offline knowledge activities can improve people's cultural lives and contribute to building a culturally strong nation.

## 2. Applications of New Technologies

### 2.1 Applications of Computer Layout Technology

In actual editing and publishing practice, computer layout technology primarily applies to topic selection, manuscript organization, review, layout, design, and editing. First, topic selection marks the initial stage of editing and publishing. Based on computer layout technology, publishers can utilize current big data models and analysis techniques to analyze consumer needs and combine these with the publishing house's positioning and target audience to select themes for each newspaper and magazine issue as well as solicitation themes. Second, for manuscript organization, editors can use computer layout technology to combine manuscripts, creating author databases and manuscript databases on computers to select and organize appropriate manuscripts according to current issue requirements. Third, computer-based manuscript review has a long development history in the editing and publishing industry and is relatively mature. Layout, design, and editing can all be accomplished using computers, with layout achievable through either professional layout software or conventional office software. Against the backdrop of internet technology development, editing and publishing layout design now has more reference cases and samples, substantially reducing the workload of publishing editors while providing inspiration for innovative layout design. Due to these advantages, computer layout technology has gained considerable attention from many publishing houses. During application, the key point requiring attention is copyright issues—the publishing industry attaches great importance to copyright, and careless selection and use of online resources in computer layout may lead to related copyright disputes.

### 2.2 Applications of Multimedia Publishing Technology

The key to multimedia application lies in the integration of audio-visual content with text. In this regard, new media platforms have opened a new door for the editing and publishing industry. For instance, TikTok, currently China's most popular short-video platform, most commonly uses the short-video-with-background-music model, supplemented with attractive titles and subtitles—a model widely accepted and loved by consumers. This model offers certain reference value for multimedia publishing. First, video content selection, like topic selection for graphic newspapers and periodicals, requires determining video selection methods based on consumer preferences obtained through big data and the publishing house's positioning and historical publication nature. Music selection constitutes an important content element in multimedia publishing,

as background music can substantially highlight the connotation of videos and subtitles and create an emotional atmosphere. Subtitles are also an important factor requiring consideration in the practical application of multimedia publishing technology—excellent and appropriate subtitle selection can elevate the connotation and style of multimedia publications, attract readers, trigger emotional resonance, and strengthen readers' psychological engagement.

### 2.3 Applications of Network Publishing

The network publishing technology studied in this paper focuses primarily on digital publishing applications, and within digital publishing, it examines the application of artificial intelligence technology, big data analysis technology, and AR interaction technology in the editing and publishing industry.

**2.3.1 Applications of Artificial Intelligence Technology** Artificial intelligence technology represents the cutting-edge direction of current social science and technology research and development, representing the latest achievements and development prospects of applied physics combined with computer technology. China has currently achieved some accomplishments in AI technology research that are gradually being applied to production and daily life—technologies such as smart home appliances, smart homes, and autonomous driving are all branches of AI. AI holds equally important significance for the editing and publishing industry because publishing must keep pace with the times, and falling behind technologically or conceptually would render the industry meaningless.

While AI will be able to replace many simple production industries in the future, it cannot completely replace publishing activities because the literary and artistic sectors require substantial subjective cognition from practitioners and cannot rely on mechanized thinking. However, AI plays a significant role in current publishing topic selection—AI-related products possess considerable consumer appeal and can quickly attract readers' attention. During the creation stage, AI serves three functions: First, speech-to-text conversion. In the new era's editing and publishing industry development, product-reader interactivity constitutes important content, and utilizing AI's speech-to-text capability can rapidly process user instructions and needs, with AI handling subsequent processing. AI can convert not only speech to text but also text to speech, thereby enabling rapid human-computer interaction. Second, replacing simple editorial work. Through machine learning, AI can replace highly repetitive manual labor such as intelligent review, intelligent topic selection, intelligent information screening, typo correction, sentence correction, and article font layout. Third, machine creation. AI can conduct literary and artistic creation, such as AI automatically outputting literary works or news articles based on specific creative ideas.

**2.3.2 Applications of Big Data Technology** Big data technology is extremely important in the editing and publishing industry because publishing demands exceptionally high standards for grasping public aesthetics and reading interests, requiring timely understanding of changes in popular consumer tastes—needs that big data technology precisely addresses. Using big data analysis, the publishing industry can promptly obtain public reading preferences, primarily through analyzing user clicks and search hotwords on currently popular short-video platforms, comparing and screening to select themes that match the publishing house’ s positioning. Moreover, big data analysis is not singular—people leave preference traces in all aspects of life, and big data analysis can collect and organize these preferences to analyze public potential needs and deep preferences. In the editing and publishing industry, using big data analysis can involve either purchasing professional big data analysis software or directly buying big data analysis results.

**2.3.3 Applications of AR Interaction Technology** As previously mentioned, interaction between publishing products and users constitutes an important research direction in the editing and publishing industry, and besides AI’ s interactive functions, AR technology also represents an effective pathway for achieving communication between readers and publications. AR technology uses mobile phones or tablets as interaction interfaces to combine publications with readers’ real-life situations, creating many novel reading experiences and enjoyments that enhance publication richness and reader acceptance [?].

### 3. Development Prospects for the Editing and Publishing Industry in the New Technology Era

In the new technology era, the future development of the editing and publishing industry will inevitably prioritize digital publishing as the main direction. Under current technological trends, physical publications will concentrate primarily on campus use, with editing of physical publications focusing on textbooks, supplementary teaching materials, exercises, and 辅导资料 (guidance materials) to expand the market for students from childhood through adulthood. However, the student market is limited and gradually approaching saturation, making digital publishing the inevitable primary method. Digital publishing can be further divided into audio-video publishing and graphic publishing according to different consumer preferences. In the future development of the editing and publishing industry, audio-graphic integration represents a highly promising direction, while the short-video market is also gradually entering a period of stable development requiring higher video quality to capture market share and attract readers. The application of a series of “Internet Plus” technologies including artificial intelligence, big data, the Internet of Things, and cloud computing will inevitably become an important driving force for the future development of the editing and publishing industry, particularly artificial intelligence and big data technologies, which represent not only a way forward for the publishing industry

but also the main direction of social scientific and technological progress [?].

The new era is an era of technology, computers, the internet, and new media. Against this backdrop, the editing and publishing industry faces both great challenges and unprecedented development opportunities, especially digital publishing, which achieved tremendous progress when combined with online education during the pandemic prevention and control period. In the future, as technological levels continue to improve, digital publications will occupy an increasingly large market share, making the standardization and strengthening of digital publishing editing work a key focus for future industry development.

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