Digital AI-driven Transformation of News Production

Wenbo Ge

College of Communication, Liaoning Communication University, Shenyang, Liaoning, China

Abstract. With the in-depth development of technologies such as artificial intelligence, 5G, big data, cloud computing, and the Internet of Things, mobile media will usher in a new period of accelerated development. Mobile internet has become the primary channel for news information release. Particularly, the application of digital AI technology in news production is pushing the entire news media industry towards an intelligent era. In order to clarify the current application status of digital AI technology in news production and promote its development, this paper introduces related concepts of digital AI technology and news production, analyzes typical applications during the news production process, summarizes advantages of digital AI technology in the field of news production, reflects on shortcomings that appear in the process of news production using digital AI technology, proposes corresponding strategies for these issues, and deeply forecasts future trends of digital AI technology application in news production. The introduction and use of digital AI technology is an inevitable trend for the future development of news production. Under the impact of digital AI technology, news production will undergo a disruptive change.

Keywords: News Production; Digital AI Technology; Big Data.

1. Introduction

The progress of journalism has always been driven by the evolution of new technologies. It not only changes the relationships between media and journalists, as well as between journalists and audiences, but also redefines news products. As a professional industrial practice, the core driving force behind the development of journalism originates from continuous technological innovation. Looking back on the development of human news communication, it is not difficult to find that technological revolutions have not only transformed media forms but also triggered an unprecedented revolution in communication. In the coming decade, it is easy to foresee that under the leadership and drive of intelligent technologies such as digital AI, internet updates, big data, cloud computing, and sensors, a new round of news production revolution has become inevitable. The methods of information production and transmission have already undergone a leapfrog transformation, and the impact of digital AI on news production is unprecedented.

This cutting-edge technology has brought profound changes to the field of news production, freeing it from the constraints of specific time and space, enabling "anytime, anywhere" creation and dissemination. Moreover, by providing unparalleled entertainment and informational resources, this technology has delivered significant benefits to society.

Therefore, the introduction and application of digital AI technology are crucial for the future development of the news industry. 2016 marked the 60th anniversary of the formal proposal of artificial intelligence and was widely recognized as the "Inception Year of AI Development." Artificial intelligence has demonstrated strong growth across many industries and has become a focal point for investment. Major domestic tech giants such as Alibaba and Baidu have actively invested in the AI sector [1] .Advances in digital AI and computer science have created the conditions for automated writing. Natural Language Generation (NLG) is a key research direction in the era of digital AI for automated journalism, characterized by speed and automation.

Narrative Science, an automated news startup, once predicted that more than 90% of news would be produced by digital AI by 2030. Digital AI technology represents a major breakthrough for the news industry, one that will significantly disrupt traditional journalistic ethics and practices [2].In other words, under the influence of digital AI, news production will undergo a transformative revolution. With the continuous development and application of technologies such as the Internet of Things (IOT), big data, virtual reality, and blockchain, the news industry has entered an era of

intelligence. These technologies not only reshape the form of news production but also drive comprehensive changes in information gathering, content creation, product distribution, presentation formats, and audience engagement. This transformation is of vital significance for the modernization and value enhancement of the traditional news industry.

2. Application of Digital AI Technology in News Production

2.1 News Topic Selection and Planning

In the aspect of topic selection and planning, digital AI technology provides news media professionals with a fresh perspective and a wealth of information resources. By utilizing digital AI technology, not only can vast amounts of data be monitored and analyzed in real-time to accurately grasp social hotspots, but digital AI also possesses superlative computing and analytical capabilities that can extract key information such as characters, events, and themes from large datasets. This provides background information and event dynamics for news media professionals, helping journalists quickly understand the full picture of events and providing strong support for the selection of news topics, offering important basis for subsequent news planning. Additionally, digital AI technology can analyze data on platforms like social media to identify and track social issues and popular culture of public interest, uncovering potential news leads and providing reporters with more angles and ideas for reporting. Moreover, through in-depth analysis of historical materials, digital AI technology can predict future trends, making news reports more forward-looking and targeted.

2.2 News Material Collection

The "70% interview, 30% writing" rule is the golden guideline of journalism, emphasizing the importance of information collection. In the era of integrated media, the computational power of artificial intelligence aids automated data investigation and information gathering, flexibly adapting to the dissemination needs of different platforms. Technologies such as voice recognition and visual recognition have brought leaps in news acquisition, while advanced technologies like drones and intelligent sensors enhance the efficiency of news interviews, ensuring the quality and timeliness of news. The application of digital AI technology in news collection enriches collection methods. The rapid development of IoT technology has promoted the application of smart sensing terminals in daily life, providing new forms of intelligent living. Joint use of GPS, smart speakers, intelligent cameras, drones, and other sensors can achieve multidimensional news information collection, eliminating blind spots and restoring true news. Wireless communication technology and AR, along with smart recording devices, can realize holographic live broadcasts and real-time resource uploads at the scene of emergencies or hot news centers, enhancing the timeliness and authenticity of news dissemination.

2.3 News Review

In the era of new media, how to screen and review news among a vast amount of information consultations is the primary task that current news professionals need to address immediately. Through the application of advanced digital AI technology, we are able to effectively solve the problem of news information review. This technology exhibits exceptional performance in text and image recognition, capable of precisely identifying and efficiently reviewing massive volumes of news information within a short time. With continuous optimization and improvement in visual, semantic, and voice technologies, digital AI technology will bring us even better review results, ensuring the accuracy and reliability of news information.

3. Advantages of Digital AI Technology in News Production

3.1 Promoting Innovation in Journalism

The application of digital AI technology has broken the labor-intensive nature of traditional journalism, leading to revolutionary changes in news production methods. In terms of news production, digital technologies provide more tools and platforms, enabling news organizations to collect, edit, and produce news content more efficiently. Simultaneously, digital technologies have promoted the development of multimedia reporting such as data journalism and visual presentations [3] .Intelligent robots can replace manual operations, improving efficiency and reducing costs in news information collection, production, review, and distribution. Furthermore, by integrating big data and cloud platforms, digital AI technology significantly enhances the automation and intelligence level of news production, making news reports more vivid. Indeed, with the popularization and development of digital AI technology, its application in the journalism industry has become increasingly widespread, subtly changing the overall development of the journalism industry and promoting its innovation.

3.2 Enhancing News Production Efficiency

Digital AI technology possesses unparalleled data processing speed and information production capabilities compared to humans. In traditional news production processes, editors need to go through information collection, editing, reviewing, and proofreading before final publication—a process that is both time-consuming and inefficient. In the information age, where news trends are fleeting, continuing to use traditional reporting formats will inevitably lead to a decline in the efficiency of capturing news hotspots within the industry. By replacing manual labor with intelligent technologies and making news production intelligent, not only can the speed of news production be increased and the workload of journalists reduced, but the news industry can also integrate the entire production process using digital AI technology. This significantly reduces the number of relevant news professionals needed, thereby controlling production costs. In terms of timing, artificial intelligence, unlike human journalists, does not require rest or sleep and can perform news gathering tasks 24 hours a day without interruption. Additionally, it can automatically write news articles, achieve intelligent layout, and precisely deliver news content to target audiences, greatly enhancing the efficiency of news production and expanding the coverage of news.

3.3 Achieving Personalized Targeted Push

Digital AI technology has brought about innovations in personalized news push. By analyzing large amounts of data, digital AI can understand users' interests, habits, and needs, providing them with personalized news content. This personalized push not only increases the accuracy of news but also enables users to quickly access information they care about. Moreover, digital AI technology can track the development of news events in real-time, providing users with the latest and most comprehensive reports. It can also continuously optimize pushed content based on user feedback and behavior, ensuring that users always receive high-quality news. This personalized news push method not only enhances user experience but also brings new business opportunities to the news industry. The introduction of digital AI technology makes news pushes smarter and more personalized, meeting users' information needs and driving progress in the news industry.

3.4 Promoting Deep Integration of Multiple News Media

Digital AI technology also promotes the deep integration of news media. Traditional media such as newspapers, television, and radio are gradually merging in the digital era, forming a multimedia, multi-platform news dissemination pattern. AI can help news producers create and disseminate content across platforms and media, achieving comprehensive coverage of news. In this era, the new boundaries of information dissemination are constantly expanding. Based on digitization, news media dissemination uses new concepts, new business forms, and new models to achieve transformation,

fully integrating into every aspect of human economic, cultural, and social life, having a profound impact on human life. From the perspectives of "full process," "holistic," "all-staff," and "full-effectiveness," the dissemination form of news media is becoming more diversified. Virtual reality, mixed reality (MR), smart internet, sensors, wearable devices, etc., provide multi-form, three-dimensional media dissemination channels, achieving multidimensional, full-process, and efficient displays. With the strong support of digital AI technology, the boundaries between traditional news media and new media such as integrated broadcasting and wireless communication are gradually disappearing, with various media gradually achieving integration and promotion through mutual influence.

4. Shortcomings of Applying Digital AI Technology in News Production

4.1 Data Privacy

The application of digital AI technology in news production raises concerns about data privacy. With the development of big data and cloud computing technologies, digital AI writing robots possess powerful data mining capabilities. While internet technology has bridged the gap between news production and audiences, information generated by users browsing news is also collected by system backends, becoming targets for AI mining. Although digital AI excels in learning and data analysis, it lacks subjective judgment abilities and struggles to distinguish between information that should not be accessed and information that can be used as news material. Therefore, when using digital AI writing robots, vigilance is required to ensure the safety and privacy protection of user information.

4.2 Mediocrity and Homogenization of Produced Content

From the perspective of digital AI applications in domestic and international news writing, AI-generated reports often appear monotonous and lack depth or innovation, struggling to engage readers. While these AI-generated reports maintain objectivity and accuracy, they typically remain at the level of delivering basic factual information, failing to meet audiences' demand for higher-quality content. The application of digital AI technology in news production reduces the probability of errors, ensuring high precision and improving production efficiency. However, most AI writing involves simulating and borrowing from existing news templates, resulting in numerous similar or repetitive reports. Consequently, there is a noticeable "homogenization" phenomenon in writing. Furthermore, since AI writing can only describe news facts based on specific semantics and lacks the rich emotions humans possess, it cannot perceive the impact of events on individuals from their perspectives, leading to insufficient depth and emotional resonance in news reports.

4.3 Generation of False Information

"Truthfulness" is the most important aspect of news reporting, yet it has become increasingly scarce. As digital AI's capabilities in news reporting continue to improve, its realism and persuasiveness make creators cautious about its necessity. It is reported that Elon Musk's OpenAI has developed an efficient algorithm capable of generating false news on any topic based on a few sentences, with high persuasiveness. However, researchers have also pointed out that such technology could be misused, for example, to create large-scale misinformation. Therefore, while advancing technological development, we must remain highly vigilant about potential risks.

5. Strategies for Addressing Challenges in Applying Digital AI Technology in News Production

5.1 Emphasizing Privacy Protection

When utilizing AI technology in news production, it is essential first to obtain explicit authorization from relevant parties and ensure the secure storage and transmission of data.

Additionally, sensitive data should be handled with encryption and other security measures to prevent data leaks and misuse. News organizations should establish comprehensive privacy protection policies and regulatory mechanisms to ensure that the use of AI technology does not infringe upon citizens' privacy rights. This includes regular reviews and updates of AI systems and strict monitoring of operations potentially involving privacy issues.

The application of digital AI technology in news production, especially when dealing with personal and sensitive data, must strictly adhere to privacy protection principles. News production often involves a large amount of personal information, such as the identities of interviewees and data related to events. If this information is collected, processed, and used without authorization, it may infringe upon the privacy rights of relevant parties. As mentioned in Viktor Mayer-Schönberger's book "Delete: The Virtue of Forgetting in the Digital Age," in today's era, forgetting has become the exception, and remembering the norm, with humans living in a digital panopticon [4] .

5.2 Strengthening Human-Machine Collaboration

Currently, the "digital AI + human review" model has become the mainstream mode for mainstream media reviews, performing excellently in terms of review efficiency, quality, and overall costs. This model covers the entire process of information dissemination, including text editing, verification of the authenticity of news information, identification of spam information, and early warning and control of virus information dissemination, effectively compensating for the lack of traditional news media gatekeepers. However, due to machines or algorithms lacking professional journalistic qualities, many time-sensitive and sudden news contents still require human review to ensure the accuracy and authenticity of news. To safeguard viewers' right to know, disseminate correct news values, and enhance viewers' information consumption literacy, this model also optimizes the selection and presentation of news content through weighted recommendations of high-quality content and important news, pop-up pushes, and content insertion methods.

6. Conclusion

Through this study, we are able to glimpse the revolutionary changes brought by digital AI technology to news production, which have profound impacts on every aspect of the news production process. With its unique advantages, digital AI technology is gradually changing the traditional model of news production, promoting the news industry towards a more efficient and intelligent direction.

However, we must also clearly recognize that digital AI technology is not omnipotent in news production. Despite bringing many advantages, it also faces some challenges and risks. In the future, with continuous technological progress and deepening application, "human-machine integration" will become an important trend in news production. By means of human-machine collaboration and complementary advantages, we can fully leverage the potential of digital AI technology in news production, promoting the rapid development and progress of the news industry.

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