Research on Innovative Pathways for Convergent Communication of Television News Programs in the 5G Era (Postprint)

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Abstract

The principal mode of traditional media transmission is television broadcasting. In the advent of the 5G era, it is essential to undertake substantive innovation grounded in the present developmental status of television media. The advantages inherent to 5G technology are manifest, characterized by elevated transmission rates, diminished energy consumption, and reduced latency. The comprehensive utilization of these attributes can engender substantial improvements in both the dissemination efficiency and quality of news programming. Television news program transmission in the 5G era must identify viable pathways, delineate explicit strategies for 5G technology application, and subsequently formulate efficacious optimization approaches, thereby enabling television news programs to achieve genuinely effective transmission and more stable development.

Full Text

2. The Impact of 5G Technology on TV News Program Dissemination

2.1 Negative Impacts

The advent of the 5G era has significantly intensified the competitive pressures facing TV news programs. With the support of mobile network technology, internet-based news programs have been injected with strong momentum for development, enabling audiences to access vast amounts of news information through online channels. While this allows TV news to effectively respond to fierce competition and achieve stable development, it also presents substantial challenges. For instance, flagship programs like *Xinwen Lianbo* (News Broadcast) from China Central Television maintain a fixed broadcast schedule and

are relayed by local stations nationwide, preserving a certain competitive advantage. However, 5G technology empowers viewers to watch news programs through diverse methods and channels, with a wide variety of software and terminals, substantially increasing the competitive pressure on television programs. Moreover, as the number of news programs continues to grow, intense competition exists not only among different programs but also between new media and traditional media outlets. While TV news holds significant advantages in dissemination power and credibility, new media proves more attractive in terms of interactivity and entertainment. Consequently, the television industry must innovate based on its actual circumstances to remain relevant.

2.2 Positive Impacts

The 5G era has brought remarkable changes to people' s lives and work, with smart networks and smartphones becoming ubiquitous. From the audience's perspective, owning a smartphone enables them to watch news programs anytime and anywhere, effectively breaking through temporal and spatial limitations. The dissemination methods employed by TV news programs have become increasingly diversified, with the internet being one of the key channels. Compared with new media news, TV news content demonstrates clear advantages in terms of depth and breadth. Particularly with the application of 5G network platforms, its influence has expanded significantly, while its functionality and timeliness have become more pronounced, better satisfying the actual needs of audiences. Unlike 4G networks, 5G networks offer stronger signal reception, greater stability, and clearer picture quality, substantially enhancing the viewing experience for users. In the 5G era, the variety of smart terminals has multiplied, with tablet computers, smartphones, and smart TVs becoming commonplace, allowing audiences to choose their preferred devices freely. TV news programs must innovate in accordance with internet characteristics to ensure their content truly resonates with people' s lives and meets their spiritual demands. Furthermore, in rural areas where large buildings are scarce, 5G signals experience significantly less interference, enabling broader popularization of 5G technology. In the near future, 5G technology will facilitate stable information transmission between urban and rural areas, ensuring smooth and unimpeded dissemination of TV news.

3. Innovative Paths for Convergent Dissemination of TV News Programs in the 5G Era

3.1 Upholding Innovation While Strengthening Mainstream and Intelligent Content Production

3.1.1 Upholding Content Quality and Achieving Effective Coverage of Mainstream Voice For TV programs in the 5G era to ensure sustainable development, they must adhere to mainstream values while selecting appropriate dissemination methods based on technological innovation. With the adop-

tion of mobile communication, news programs must guarantee high quality and play a guiding role in the public opinion arena. The network-native generation places high importance on technology-driven mobile communication, and the current landscape of news dissemination shows that user-generated content (UGC) captured via smartphones provides richer viewing material. The transmission speed of 5G technology is exceptionally fast with large bandwidth, significantly improving the effectiveness and speed of network transmission. This enables further network optimization, making content production distributed and cross-disciplinary, with advantages in both quality and efficiency. News content can be collected and produced in a short time, particularly demonstrating clear strengths in the production of breaking news content. Although technological iteration facilitates more convenient UGC production and dissemination, quality cannot be guaranteed, and ideological complexity poses challenges, continuously increasing pressure on media institutions. Information content is notably characterized by emotional and subjective elements, making it difficult for the public to accurately discern news information. When news events occur, people most hope to learn the truth and receive positive energy. Traditional mainstream media possesses distinct advantages in terms of height, strength, and warmth —conducting rigorous fact-checking to ensure authenticity and authority. TV news dissemination must innovate its technical means to substantially improve program quality, selecting expression methods that meet audience needs, vigorously disseminating mainstream values, and correctly guiding public opinion. TV news workers must have a clear understanding of this and shoulder their responsibilities. The application of 5G technology can enable genuine innovation in narrative methods and voice coverage. In particular, integrating 5G with 4K, 8K, and VR technologies can transform video collection, editing, and dissemination. The application of 5G technology can substantially increase the information carrying capacity of content, accelerate dissemination speed, greatly expand coverage, and effectively eliminate problems such as limited perspective and information gaps, thereby enabling truly panoramic event reporting. News content must ensure authenticity while demonstrating completeness and depth to guarantee in-depth reporting. Additionally, when building an integrated all-media convergence platform, 5G technology can provide more robust technical support, allowing mainstream voices to achieve wide coverage. Through 5G technology, information barriers between urban and rural areas can be broken, spectrum sharing can be achieved, and mobile communication in rural areas can be effectively realized.

3.2 Live Broadcasting Will Become the Primary Method for TV News Reporting

Because signals can be transmitted in a short time, the cost of live reporting can be controlled within a reasonable range while efficiency is substantially improved. The bandwidth of 5G can support multi-channel 4K live streaming, and 4K shooting can also achieve flexible deployment. By fully utilizing relevant technologies, effective production of 4K ultra-high-definition content can

be realized, enabling the construction of multi-screen and multi-view scenarios. In 2019, China Central Television used 5G networks to enhance its reporting capabilities for the Two Sessions, ensuring significantly improved data concurrency rates and providing a good latency experience, thereby enhancing the convenience and efficiency of video return transmission and live reporting. The CCTV News Center achieved full 5G signal coverage for this reporting event, and the "Minister' s Corridor" live broadcast combined 5G with VR, enriching the converged media reporting methods and enabling smoother picture transmission and video live streaming. Additionally, 5G technology can be utilized for major reporting events. For instance, when covering news in areas with large crowds, this technology enables mobile editing and collection to be completed smoothly, with high-definition video returning in real time, clearer pictures, and substantially improved latency issues. The entire picture appears delicate and continuous without stuttering, while ensuring that colors present a true sense of layering.

3.3 Short Videos Will Become an Important Future Presentation Format for News Programs

After the full application of 5G networks, 4K ultra-high-definition video can truly achieve popularization, ensuring that video interaction frequency and quantity grow geometrically, thereby enabling significant transformation in video dissemination and user interaction. Through 5G networks, the intelligence level of video transmission can be substantially improved, ensuring that TV converged media news can truly achieve mobile communication and short video production. When 5G technology achieves wide coverage, it will enable downloads within seconds and substantially accelerate transmission speed—essentially allowing instantaneous downloading and dissemination. This will elevate collection, production, and broadcasting to new heights, with video streams becoming the primary mode of information expression. The full application of 5G technology can eliminate problems related to traffic, speed, and cost. For audiences, short videos are the most popular format when watching and uploading news. By effectively combining 5G technology with AI technology, short video news programs can be released within a short time, with substantially improved stability and intelligence level. The use of 5G technology can ensure more convenient dissemination of news content, thereby greatly expanding the coverage of TV news content.

3.4 Handling Scene Transitions to Reflect Platform Characteristics in Program Presentation

The application of 5G technology can make connections between related fields closer and enable true interconnectivity across different domains. For example, TV news programs can be directly connected with other fields, allowing more flexible program information transfer and switching, with more diverse communication terminals. At the current stage, as 5G technology develops at

an accelerated pace, its full utilization can ensure that TV program dissemination truly presents scene-based characteristics, with different scenes achieving seamless connection. This substantially improves the overall level of TV news program dissemination. In addition to 5G technology, some new technologies have also been applied, which can promote TV news production. For instance, applying big data technology enables relevant personnel to identify numerous news points and excavate those with high value. Through 5G technology, problems such as long dissemination delays and unsatisfactory connectivity can be effectively solved, ensuring that audiences enjoy a higher-quality news experience. TV news must fully leverage its own advantages, pay close attention to differences among various scenes, and ensure that the personalized needs of different audiences are effectively met. By narrowing the distance between virtual scenes and live scenes, news program quality can be substantially improved, and the attractiveness of TV news can be genuinely enhanced.

Conclusion

In summary, in the current 5G era context, the specific dissemination channels and formats of TV news programs should strictly follow industry market changes, correctly examine both the positive and negative impacts faced under current technical conditions, and actively explore innovative development paths for TV news program dissemination. On the one hand, we should seize opportunities, keep pace with the times, and continuously innovate and improve development models. On the other hand, we should correctly examine existing problems, face negative influencing factors, and firmly take an innovative development path based on reality. In the 5G era, we should utilize modern technical means and methods to comprehensively boost the mutual integration between the TV news industry and new media. Under conditions that meet audience needs and market development laws, we should maintain the dissemination and expansion value of news programs, fundamentally improve the quality of TV news programs, and pursue a path of convergent development.

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