Analysis of the Application of Safe Broadcasting Technologies for Radio and Television in the New Era: Postprint

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Abstract

The article first elaborates on the application significance of safe broadcasting technologies for radio and television in the new era, then analyzes several major safe broadcasting technologies currently employed, and finally examines the improvement of their application, with the hope of providing a reference for the stable development of China' s radio and television industry.

Full Text

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Abstract
This article first elaborates on the significance of applying safe broadcasting technology for radio and television in the new era, then analyzes several primary safe broadcasting technologies currently in use, and finally discusses improvements to the application of these technologies, hoping to provide references for the stable development of China' s radio and television industry.

Keywords: Radio and television; safe broadcasting technology; security protection technology; diversified era; technical talent

With the progress of the times and the development of science and technology, China' s industrialization and urbanization have gradually deepened, with development and technical application levels in various industries significantly improving. A new economic era characterized by diversification has quietly arrived. In this context, radio and television, as one of the most effective channels for information dissemination, must also upgrade and improve their operations. While further satisfying the spiritual and cultural needs of audiences, they must take effective measures to control the spread of harmful information and employ

safe broadcasting technology to strictly monitor broadcast content, ensuring its authenticity and healthiness. As broadcasting technology increasingly intersects with the external environment and internet information, the volume of information has grown substantially, and the radio and television industry frequently suffers losses due to safe broadcasting issues. At present, radio and television stations at all levels in China have begun deploying security measures for network platforms and cable digital television ports to prevent security risks during program broadcasting. Additionally, many stations have responded to the call of relevant management departments by establishing specialized research groups for safe broadcasting technology, dedicated to the R&D and application upgrades of specialized technologies to avoid security vulnerabilities and malicious attacks, thereby strengthening security protection. Currently, various radio and television stations have adopted new cryptographic technologies, network boundary security technologies, and data security technologies, which have effectively enhanced broadcasting safety.

1. Significance of Safe Broadcasting Technology Application in the New Era

Safe broadcasting technology for radio and television in the new era refers to an important type of technology in the media industry that, within the context of diversified economic development and social progress, can satisfy people' s growing material and cultural needs while effectively preventing the spread of harmful information. Centered on China' s core socialist values, it flexibly applies various modern means to strictly control information content and ensure the quality of radio and television program broadcasts. Compared with Western developed countries, China' s radio and television industry started relatively late and still has certain gaps in service quality. Meanwhile, China has entered a period of great technological development across all industries. Various media sectors related to safe broadcasting technology, such as long-distance news connections and live sports event broadcasts, have direct connections to people' s lives and even significantly impact social progress and development. [1] In this context, the application value of safe broadcasting technology becomes evident. Only by ensuring broadcast information security can we provide favorable conditions for social stability and development. Therefore, we should analyze the application of safe broadcasting technology from multiple fields and perspectives to improve the quality of people' s cultural lives and establish a stable foundation for the healthy development of China' s radio and television industry.

2.2 Comprehensive Monitoring Technology

Safe broadcasting in radio and television cannot be achieved without the application of specialized monitoring technologies. In recent years, radio and television stations across China have gradually improved their monitoring capabilities, primarily because past safe broadcasting incidents have had negative impacts on

both the stations themselves and social development. Consequently, various stations have analyzed and positioned their actual situations, intensified security monitoring efforts, and established comprehensive monitoring systems to exercise strict supervision throughout the entire process from information collection and processing to program broadcasting. Additionally, attention should be paid to technology updates and upgrades to improve control over broadcasting security incidents, focusing monitoring efforts on abnormal video and audio recording issues, video and audio stream detection, and other key targets. All environments should be closely monitored to promptly identify security risks and take scientific measures for handling them, thereby comprehensively ensuring safe radio and television broadcasting.

2.3 Scientific Dispatching and Emergency Response Technology

Radio and television program broadcasting may be forced to suspend due to interference from external environmental factors or on-site emergencies. To ensure rapid resumption of normal broadcasting, corresponding command and dispatching technologies should be actively adopted to collect and process safe broadcasting data, outputting it to terminal systems to control security risks. If security risks or potential hazards emerge during broadcasting, backup data must be promptly retrieved to ensure normal program playback. To date, China' s radio and television stations have basically achieved the application of scientific dispatching and emergency response technologies, enabling automatic fault identification and rapid recovery during program broadcasting, as well as automatic collection of fault information transmitted to manual operation ports for inspection and record-keeping. [2] Furthermore, to further improve command and dispatching efficiency, comprehensive application standards and corresponding management systems for radio and television safe broadcasting technology must be established. Due to significant differences in economic and social development levels across China, the degree of security technology application varies among radio and television stations. Under such circumstances, stations in more developed regions enjoy greater broadcasting security guarantees, while those in less developed regions still face certain risks and cannot fully ensure information transmission quality or real-time effectiveness of program information. [3] Therefore, unified national standards for safe broadcasting technology application and management systems can be established to narrow regional security technology gaps and encourage less developed regions to continuously improve their broadcasting security levels.

2.1 Security Protection Technology

In recent years, with the development and application of various specialized internet information technologies in China, the traditionally closed production and information transmission environment can no longer meet the current development needs of radio and television programs. Meanwhile, as broadcasting

technology increasingly intersects with the external environment and internet information, the volume of information has grown substantially, and the radio and television industry frequently suffers losses due to safe broadcasting issues. At present, radio and television stations at all levels in China have begun deploying security measures for network platforms and cable digital television ports to prevent security risks during program broadcasting. Additionally, many stations have responded to the call of relevant management departments by establishing specialized research groups for safe broadcasting technology, dedicated to the R&D and application upgrades of specialized technologies to avoid security vulnerabilities and malicious attacks, thereby strengthening security protection. Currently, various radio and television stations have adopted new cryptographic technologies, network boundary security technologies, and data security technologies, which have effectively enhanced broadcasting safety.

3.1 Timely Transformation of Technical Concepts

With the application and development of internet information technology, radio and television stations—as highly technology-dependent organizations—must timely transform their technical application concepts and prioritize forward-thinking to maintain their leading position in the media industry. In the future development of China' s radio and television industry, local stations and relevant management departments should further increase their emphasis on safe broadcasting technology, strengthen technological innovation, and ensure that the technologies employed for safe program broadcasting remain at the industry forefront, thereby establishing favorable conditions for the healthy development of the radio and television media industry. Government management departments should also provide more financial and policy support for the application of safe broadcasting technology from various perspectives, encouraging specialized technical teams to actively conduct research and innovation while strengthening technical exchanges with external experts and researchers. This will continuously enhance their scientific understanding of advanced technologies and keep them abreast of developmental trends, which will not only facilitate the achievement of safe broadcasting objectives but also optimize program content to ensure it aligns with the themes of the times.

3.2 Improving Technical Application Standards and Management Systems

To further improve broadcasting security and manage related technology applications effectively, comprehensive application standards and corresponding management systems for radio and television safe broadcasting technology must be established. China's government management departments can establish unified national standards and management systems for safe broadcasting technology application to narrow regional security technology gaps. This will encourage less developed regions to continuously improve while ensuring that broadcasting monitoring work is properly implemented, comprehensively enhancing broad-

casting security levels. Regarding management systems, processes should be simplified as much as possible, with improvements in actual management efficiency serving as a key evaluation metric. Non-essential management steps should be eliminated, responsibilities for each work segment should be clearly assigned to individuals, and all work processes should follow clear regulations to improve command and dispatching efficiency. During practical application, systems should be adjusted and optimized according to actual needs to explore a management system that fully aligns with organizational development realities, thereby forming a guarantee for broadcasting safety.

3.3 Strengthening Technical Talent Team Construction

In the context of the diversified era, China' s internet information technology R&D and application levels have significantly improved, with various specialized internet information technologies being applied across industry sectors, further promoting comprehensive enhancement of social productivity. For the radio and television industry, people have put forward more personalized requirements for program content and broadcasting quality. Especially in recent years, China' s radio and television technology research and application have made breakthrough progress, though there remains considerable room for development compared with Western developed countries. Therefore, radio and television stations should strengthen the recruitment and cultivation of technical, innovative, and practical talents, enhance the construction of high-quality talent teams, and improve the application effectiveness of safe broadcasting technology through talent advantages. Humanized talent management mechanisms should be formulated to reduce talent turnover. Simultaneously, scientific employee training systems should be established to provide periodic professional training for relevant staff, laying a solid foundation for future operations. Additionally, scientific information technology should be utilized to conduct comprehensive real-time monitoring of broadcasting systems, establishing intelligent monitoring platforms to ensure broadcast content security, information transmission safety, and enhance broadcasting defense capabilities. Technical personnel should also receive information technology training to maintain the advanced level of professional talents in radio and television stations, thereby comprehensively ensuring safe broadcasting of radio and television programs.

In summary, as pioneers in China' s media industry development, radio and television stations' dissemination of media program information has direct impacts on public thought and life as well as China' s overall social development. Only by properly managing safe broadcasting can we ensure program content quality and prevent malicious attacks and other risks from affecting broadcast quality. Therefore, in the current new era context, strengthening the application of safe broadcasting technology is crucial. Radio and television stations should conduct detailed analyses of their actual development situations, take effective measures to upgrade and improve technologies, and work from multiple perspectives to jointly ensure safe broadcasting, thereby providing better

broadcasting experiences for the public. [4]

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