Research on Countermeasures for Ensuring Safe Broadcasting of Radio and Television in the Converged Media Era: Postprint

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Abstract

Internet technology provides support for media technology innovation. Convergence has gradually become the mainstream development trend, with broadcast television media integrating internet technology to enhance media development efficiency. As the scope of informatization applications expands, secure program broadcasting has become a focal point of attention in the development of converged media. This article explores and analyzes issues related to secure broadcasting of radio and television in the era of converged media, providing a reference for readers.

Full Text

Preamble

Research on Countermeasures to Ensure Safe Broadcasting of Radio and Television in the Era of Converged Media

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Abstract: Internet technology provides crucial support for media technological innovation, and convergence has gradually become the mainstream development trend. Radio and television media are integrating with internet technology to enhance development efficiency. As the scope of informatization applications expands, safe program broadcasting has become a focal concern in converged media development. This article examines and analyzes issues related to safe broadcasting of radio and television based on the converged media era, offering insights for readers.

Keywords: converged media era; radio and television; safe broadcasting; guarantee technology; protection technology

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Radio and television serve as channels for information acquisition, with the public being the recipients. Therefore, broadcasters must actively fulfill their social responsibilities, continuously regulate their own conduct, disseminate correct values to the public, and prioritize improvements in broadcasting technology safety to enhance reliability and security.

1. Safe Broadcasting of Radio and Television in the Converged Media Era

Radio and television must ensure broadcasting safety by reducing adverse interference and impacts from network signals, ensuring that broadcast content aligns with positive and healthy communication principles, consciously resisting harmful information, and guaranteeing that audiences receive value-oriented information [1]. In the converged media environment, stable signal broadcasting has become a critical issue. First, it is essential to ensure ideological correctness and propose scientific countermeasures. Broadcasting personnel must focus on monitoring interference and attack information, adopt proactive measures to address adverse effects, eliminate security risks, and ensure safe broadcasting of radio and television programs. Second, equipment and facilities must be properly maintained through continuous inspection and upkeep. Program broadcasting requires equipment and technical support, with close monitoring of equipment operational status. Third, program content review and rebroadcast review must be emphasized to safeguard broadcasting security. Simultaneously, program supervision should be intensified to disseminate positive information and promote harmonious social development. To maintain television signal reception security, program producers and managers must ensure signal reception stability, employ authorized management measures, and combat illegal interference with radio and television network signals.

2. Opportunities and Challenges for Radio and Television in the Converged Media Era

In the converged media era, the broadcasting industry is focusing on upgrading and transformation, increasing cable television quantities to meet public demand for spiritual and cultural content while aligning with socioeconomic development. However, due to significant market constraints and intense industry competition, technological upgrades and business development have become competitive focal points, with increasing spatial compression forcing industry

transformation. The rising market share of new media has created substantial development challenges for radio and television, primarily manifested in three aspects: First, user attrition. Market research indicates that radio and television user loss rates reach approximately 7%, significantly impacting broadcasting revenues and profit margins [2]. Second, insufficient technical reserves. Traditional broadcasting technologies lag far behind user demands, severely affecting user experience. In new business expansion, inadequate technical support levels have weakened competitive strength. Third, singular services and products: Broadcasters have not introduced new businesses or value-added services, inaccurately identified growth points, and failed to deeply excavate audience value, thereby degrading user experience and reducing market competitiveness.

Despite these challenges, the broadcasting industry also faces numerous development opportunities. First, supported by the digital economy, the state has proposed the "Digital China" and "Cyber Power" strategies, providing guarantees for industry upgrading and transformation. Second, the rapid development of big data, cloud computing, and Internet of Things technologies has enabled traditional video surveillance, integrated systems, and line leasing to evolve toward service technologies, establishing demand points for smart broadcasting and facilitating integration with various fields [3]. Currently, digital life has been widely promoted, and the public' s high cultural demands can promote broadcasting reform and development. In the converged media era, government departments emphasize policy support to accelerate the transformation of radio and television toward intelligent directions.

3. Key Technologies for Safe Broadcasting

3.1 Server Detection

With multimedia technology support, various regions are emphasizing investment in broadcasting safety management. However, significant differences in regional management methods result in considerable variations in broadcasting technology implementation effectiveness [4]. To enhance broadcasting safety, safety broadcasting technologies must be optimized and perfected. During the development of safety broadcasting technology, institutional and mechanism guarantees must be strengthened, focusing on technological optimization and innovation. By leveraging radio and television' s advantages in communication scope and speed, along with information and digital technologies, the modernization level of broadcasting technology can be elevated. Broadcasting personnel must master server detection technology, which can reduce the incidence of failure problems.

3.2 Mobile Monitoring Technology

In the new environment, mobile monitoring technology can ensure broadcasting safety. This technology enables time linkage between detection technology and monitoring systems, improving monitoring work efficiency [5]. At present,

radio and television mobile monitoring systems remain imperfect, only achieving small-range mobility. To address this limitation and ensure broadcasting safety, fixed monitoring technology and mobile monitoring technology should be integrated to enable comprehensive monitoring of broadcasting technologies.

3.3 Security Protection Technology

The promotion and application of information technology in broadcasting can ensure broadcasting stability. Security protection technology involves numerous components, specifically: First, information security technology. New media technology research and development provides convenient channels for audio-visual communication, gradually highlighting information security issues. Common information security technologies involve access control and cryptography. Second, system reinforcement technology. This technology can safeguard radio and television system operations, and optimizing system reinforcement technology enables development toward comprehensive integration.

4. Countermeasures for Ensuring Safe Broadcasting

4.1 Optimizing the Broadcasting Operation Platform

First, establish a data processing center. The design modules include network architecture, storage space, and system security. System security involves security protection, availability clusters, and data backup. Security protection mechanisms should be constructed according to national information security standards. Server terminals should be developed, utilizing data backup systems to backup virtual architecture data information. Virtual component control should be emphasized to enable timely data recovery and backup when security issues occur. The network architecture employs IP-based single network architecture channels, utilizing high-performance firewalls for real-time business interfacing, with data transmission functionality as the technical core [6]. Both program production and office networks can transmit data through the platform, emphasizing strengthened correlation between internet and production network services. The network service area includes service zones and isolation protection zones. The isolation protection zone aggregates and transmits content, while the backend service zone achieves core deployment to ensure platform terminal operational effectiveness and continuously improve service application levels.

Second, establish a dispatch command center. In the converged media era, the dispatch command center platform is crucial, as production workflows, video connections, and influence analysis in broadcasting program processes can all display data on large screens to guide broadcasting dispatch and command [7]. The dispatch command center functions as follows: First, it effectively serves converged media operations and production through functional displays and resource scheduling. Second, it can display network television signals through multiple approaches to provide technical support for broadcasting. Third, dur-

ing topic planning and scheduling, it encompasses resources and topic content. Following clue aggregation, it ensures scientific topic selection while compiling report content. After planning completion, production resource quality can be continuously improved by combining topic forms and scopes.

Third, establish an operation monitoring center. This involves data mining, system monitoring, and business monitoring. According to broadcasting operation requirements, it emphasizes resource collection, editing, and transmission processing. Various businesses should be monitored according to broadcasting needs and displayed through data. Data mining should be emphasized to highlight information identification functions, particularly deep resource relationships. Content correlation system construction benefits should be ensured through classification methods. During system monitoring, performance management, system topology, and alarm management should be emphasized to ensure platform data monitoring quality.

4.2 Developing Safe Broadcasting Protection Technology

Safe broadcasting of radio and television relies on security protection technology, security reinforcement technology, and information security technology. Broadcasting system configurations should be optimized to backup data information online. In the converged media era, thermal energy intelligent technology can analyze data information to enhance broadcasting quality, optimize data backup configurations, improve switching speeds, and increase data traffic. Broadcasting systems should be updated and regulated to alleviate operational loads, improving program data backup rates and transmission rates. To ensure safe broadcasting, broadcasters must fully leverage protection technology advantages, integrate big data technology to enhance data transmission and exchange capabilities, and maintain data reliability [8]. Information transmission methods should be modified to safeguard broadcasting security. To ensure broadcasting safety during data information transmission, security technologies must satisfy technical update speeds while emphasizing system security protection and control.

4.3 Establishing a Network Security Mechanism

During broadcasting production and operation, substantial data exchange requirements necessitate ensuring converged media platform security. Platform security operation systems can integrate converged media platforms, non-linear editing networks, and program production. Combined with broadcasting information security monitoring and evaluation methods, broadcasting safety evaluation effectiveness can be ensured. To guarantee safe broadcasting, dedicated networks should also be constructed to eliminate network security risks. Virtual private networks offer multiple functions, establishing dedicated networks within public networks, emphasizing encrypted communication processing, and applying these to network systems. For open network platforms, dedicated networks demonstrate strong closure effects and high security, providing users

with secure network platforms through independent network environments [9]. Dedicated network technology has begun to be promoted and applied in radio and television safe broadcasting. Furthermore, to maintain broadcasting safety, security detection and monitoring mechanisms should be implemented to effectively function in broadcasting network security, with specialized personnel assigned for professional supervision and management. Virus intrusion is a gradual process, requiring broadcasting personnel to monitor network environments in real-time, promptly identify adverse issues, implement intervention measures, maintain network operational environmental benefits, and provide network guarantees for broadcasting programs.

4.4 Establishing a Security Technology Management System

Establishing safe broadcasting management systems through security management mechanisms can clarify responsibilities across different departments and positions. Institutional constraints should be strengthened to implement personnel responsibilities at all positions and avoid situations where no one assumes responsibility. Combined with radio and television security technology management conditions, market characteristics and technical standards should be considered to accurately identify security management loopholes and eliminate security risks through security management technologies. Simultaneously, radio and television supervision and management levels should be enhanced, professional qualities improved, and program broadcasting safety guaranteed. Broadcasting management personnel should participate in daily learning and training, comprehensively implement reward and punishment systems, enhance staff enthusiasm and motivation, thereby maintaining broadcasting safety and improving program broadcasting quality.

4.5 Ensuring Program Safe Broadcasting Through Diversified Technologies

In the information age, the popularization of radio and television has elevated requirements for broadcasting content. Technical personnel must not only master fundamental technologies but also control broadcasting operations, employing multiple advanced technologies to safeguard broadcasting safety. First, data processing technology. Radio and television technology encompasses numerous components, including big data, satellite, and wireless technologies, requiring broadcasting personnel to master data processing and analysis technologies to comprehensively analyze information security and value. Analysis of broadcasting technology practice demonstrates that data processing technology constitutes an important technology. In the converged media environment, broadcasting personnel should devote energy to technology research and development to contribute to industry development. Second, integrated monitoring technology. Integrated monitoring technology demonstrates significant application effects in broadcasting, ensuring safe, stable, and high-quality program broadcasting. Simultaneously, broadcasting system inspection and maintenance should be em-

phasized to ensure operational stability. During broadcasting system operation, technical personnel must increase emphasis on safe broadcasting. Broadcasting represents an important method of dissemination, transmitting information through real-time push methods. Broadcasting errors can cause adverse effects. To reduce broadcasting accidents, broadcasters should apply advanced inspection technologies to comprehensively examine program content and avoid erroneous information. For example, before program broadcasting, cooperative playback tapes should be inspected and organized, with participation in playback detection work to reduce accidents such as misbroadcasting, omission, and interruption. Third, emergency command and dispatch technology. This technology can guarantee smooth program broadcasting. Before broadcasting, staff should carefully survey broadcast sites, closely observe facility operational status, and emphasize detail management at broadcasting sites. Pre-broadcasting inspection methods can efficiently address playback issues. Despite comprehensive site environment surveys in broadcasting technology, numerous hidden problems exist, necessitating emergency measures and full utilization of emergency command and dispatch technology. When broadcasting issues occur, processing methods can be proposed within the shortest time to minimize adverse broadcasting impacts. In broadcasting development, applying safe broadcasting technology can ensure normal program broadcasting. Therefore, intelligent technology should also be applied to leverage inspection and supervision technology functions, thereby ensuring the core of safe broadcasting technology and enabling in-depth research and application of technical measures to transform technical solutions.

4.6 Emphasizing Professional Personnel Training

The broadcasting industry has substantial talent demands, and safe program broadcasting requires talent support. Program transmission, equipment management, and usage must all be handled by professional personnel, necessitating emphasis on broadcasting talent education and training. First, emphasize ideological quality and professional ethics quality (continued on page 157).

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