

Research on Development Direction of Radio and Television Engineering Technology in the New Era: Postprint

Authors: Li Haiqun

Date: 2023-10-08T00:00:00+00:00

Abstract

As a traditional medium, broadcast television media has been impacted by new media, with its operating environment undergoing varying degrees of changes that have significantly weakened its competitive advantages. Alongside the development of scientific and technological innovation, numerous novel technical means have emerged, whose application in broadcast television engineering helps ameliorate the defects and deficiencies of traditional technologies, optimize the production and broadcasting workflows of broadcast television programs, enhance service quality, and better satisfy users' diversified spiritual and cultural needs. However, constrained by various factors, the development of broadcast television engineering technology in many regions currently lacks sufficient financial support, and the supporting institutional system remains imperfect, affecting the development level of broadcast television media to varying degrees. In view of this, this article analyzes the development direction of broadcast television engineering technology, and proposes more rational and effective technical approaches based on the current development status of broadcast television engineering in China, with the aim of promoting the healthy development of broadcast television engineering technology.

Full Text

Preamble

Title: Research on the Development Direction of Broadcasting and Television Engineering Technology in the New Era

Author: Li Haiqun (Yanggu County Converged Media Center, Liaocheng, Shandong 252300)

Abstract: As a traditional medium, broadcasting and television media have experienced varying degrees of change in their living environment under the

impact of new media, which has greatly weakened their competitive advantages. With the development of scientific and technological innovation, many new technical means have emerged, and their application in broadcasting and television engineering helps to improve the defects and deficiencies of traditional technologies, optimize broadcasting and television program production and broadcasting processes, enhance service quality, and better meet users' diversified spiritual and cultural needs. However, due to many limiting factors, the development of broadcasting and television engineering technology in many regions currently lacks sufficient financial support, and the supporting institutional system is imperfect, which affects the development level of broadcasting and television media to varying degrees.

In view of this, this article analyzes the development direction of broadcasting and television engineering technology and proposes more reasonable and effective technical means based on the current development status of broadcasting and television engineering in China, with a view to promoting the sound development of broadcasting and television engineering technology.

Keywords: broadcasting and television engineering; traditional media; traditional technology; development direction; network technology

CLC number: TN948

Document code: A

Article ID: 1671-0134(2022)04-045-03

DOI: 10.19483/j.cnki.11-4653/n.2022.04.011

Citation format: Li Haiqun. Research on the development direction of broadcasting and television engineering technology in the new era [J]. China Media Technology, 2022(04): 45-47.

With the progress and development of the times, technological transformation in the broadcasting and television field is gradually deepening. The emergence of a large number of new technologies and methods has prompted the traditional communications industry to evolve from analog signals and digital signals toward network media, enhancing signal transmission capabilities while improving broadcasting and television program quality and minimizing external technological dependence as much as possible [2].

1. Current Problems in Broadcasting and Television Engineering Technology

1.1 Strong External Dependency

Based on the current development status of broadcasting and television engineering technology in China, although considerable achievements have been made in long-term development and supporting technical levels have been significantly improved, the reality is that the industry still cannot do without support from foreign advanced technologies, and the problem of foreign technological

monopoly is relatively serious [1]. Electronic satellite technology, as the core technology of broadcasting and television engineering, has matured after years of development. Despite China's remarkable achievements in electronic satellite research and development, the core technologies of related industries still cannot escape the restrictions of foreign technological monopolies. Technological development is not achieved overnight but is a long-term process. Imitation is normal in the initial stage of development, but as development gradually progresses and improves, China has begun to vigorously cultivate high-end talent, and its manufacturing industry has gradually reached internationally advanced levels. High-end talent is the fundamental condition for breaking technological monopoly restrictions.

In addition, satellites serving as signal transmission relay stations for most regions are formed through the organic integration of broadcasting and television transmission engineering with various information technologies. Despite obtaining professional technical support, there are still many problems with satellite components. The long distance from the ground and the two major signal transmissions for information data reception are easily interfered with, reducing the quality of broadcasting and television signal transmission. These problems require further improvement, with a commitment to developing anti-interference technology for broadcasting and television signals, enhancing the anti-interference capability of broadcasting and television systems, expanding signal coverage, and enhancing signal transmission capabilities while improving program quality and minimizing external technological dependence [2].

1.2 Insufficient Cultivation of Professional High-End Talent

In the future development of broadcasting and television engineering technology, limitations in the education system, funding support, and technology have led to insufficient cultivation of high-end professional talent and unsatisfactory R&D results. In the subsequent digital development of broadcasting and television engineering technology, the continuously increasing R&D demands require the absorption and cultivation of more high-end professional talent.

Talent cultivation should focus on developing innovation capabilities and team consciousness to inject a continuous stream of professional talent for industrial development and promote high-level development of broadcasting and television engineering technology [3]. Therefore, to cultivate high-quality and professional broadcasting and television engineering talent, it is necessary to actively promote reforms in higher education for broadcasting and television, introduce new educational concepts and methods, and while focusing on talent acquisition of professional theoretical knowledge, devote efforts to cultivating talent's innovative and team consciousness. This approach facilitates the building of a high-quality talent team, providing solid guarantees for sustainable industrial development and making greater contributions [4].

1.3 Imperfect Supporting Regulations and Standards

Based on the current development of China's broadcasting and television industry, which is in a healthy development stage and gradually integrating network technology, information technology, and computing technology to greatly enhance broadcasting and television engineering technology levels, the reality is that regulations and policies for the broadcasting and television industry still need improvement. In the development of the broadcasting and television engineering industry, information types are diverse and quality varies [5]. In daily life, many television programs with poor taste and low quality are often found, containing vulgar content that completely violates proper values, 埋下 many safety hazards and throwing the media market into chaos.

The root cause lies in imperfect laws and regulations and insufficient supervision, resulting in a lack of effective oversight over much harmful information in the market and a situation where inferior products are mixed with superior ones. This is mainly manifested in broadcasting and television stations focusing excessively on economic benefits while neglecting program quality. However, induced by harmful information, users may suffer huge economic losses, producing a series of chain reactions [6].

1.4 Low-Quality Infrastructure

Based on the current development status of broadcasting and television engineering technology, infrastructure is imperfect and of low quality. Many important equipment-based engineering technologies have not been widely applied in practice, affecting broadcasting and television engineering quality to varying degrees. Therefore, it is necessary to select high-quality infrastructure and perform proper maintenance and repair work. However, constrained by many factors, infrastructure wears down and ages, with frequent power transmission line failures affecting signal reception quality and restricting subsequent development of broadcasting and television engineering technology. In addition, insufficient funding support for some broadcasting and television engineering projects leads to funding shortages and tight working capital, while the renovation of old lines and equipment requires substantial financial support, which limits broadcasting and television engineering construction and development to a certain extent. Even though the government provides funding to solve technical problems, a series of inevitable hidden dangers affect the technological transformation and upgrading of broadcasting and television engineering, inducing adverse effects.

2. Optimization and Improvement Measures for Broadcasting and Television Engineering Technology

Based on a comprehensive consideration of the problems in China's broadcasting and television engineering technology development, it is necessary to correctly recognize the need for technological optimization and upgrading, actively integrate resource advantages, and propose practical measures for comprehensive

implementation to break foreign technological blockades and effectively enhance China's broadcasting and television engineering technology level. Specific measures are as follows.

2.1 Optimize and Improve Basic Elements

To promote the development of China's broadcasting and television engineering technology in the new era, we should first base ourselves on actual conditions, coordinate and optimize construction funds, promote network information construction while optimizing project funding structures to effectively improve project quality; optimize the allocation and utilization of construction funds by incorporating administrative exclusive projects into the engineering construction category to optimize the engineering construction funding structure; strengthen the functions of relevant government departments at all levels, with government managers needing to transform their thinking concepts, deepen their understanding and attention to broadcasting and television engineering construction, appropriately increase funding support, and broaden funding channels; actively promote the improvement and perfection of broadcasting and television engineering infrastructure, enhance facility construction quality, select high-quality and standard-compliant materials to eliminate safety hazards from the source; focus on handling aging cables and optical fiber facilities, set up anti-corrosion protective layers after underground cable burial, and maximize the avoidance of exposed line damage [7].

2.2 Build a Relatively Complete Signal Transmission Mechanism

Signal transmission quality greatly affects program quality. Therefore, promoting the innovation and optimization of anti-interference technology is the main direction of broadcasting and television engineering technology development. Relevant departments should strengthen their functions, promote anti-interference technology optimization and improvement based on actual conditions, integrate resources according to actual situations, and form a relatively complete technical operation mechanism and development model. Promoting the upgrading and innovation of signal processing technologies beyond coverage areas and optimizing the operation structure of interference signal processing can significantly enhance the application effect of satellite technology. Promoting the high-level development of signal transmission and reception technologies can minimize adverse external interference with signals and provide quality services for users.

2.3 Strengthen Professional Talent Cultivation

To promote the development of broadcasting and television engineering technology, while appropriately increasing capital investment, attention must also be paid to improving and perfecting supporting infrastructure, with a focus on cultivating highly skilled talent to break foreign technological monopolies. The cultivation of high-quality technical talent is crucial and also a long-term

and arduous task. If technical personnel lack professional ability, innovation capability, and practical skills, resource waste will occur [8]. Therefore, broadcasting and television media can establish cooperative relationships with higher education institutions in various regions, integrate respective advantageous resources, impart cutting-edge industry work experience and technical methods, clarify talent cultivation needs, and on this basis provide support for adjusting talent cultivation programs in higher education institutions. Broadcasting and television engineering media units can provide support for professional practice of technical talent, accumulating work experience in post practice, learning cutting-edge technical methods, integrating theory with practice, and delivering more high-quality technical talent. With professional personnel support, broadcasting and television engineering construction can be steadily advanced. In addition to professional training for new employees, on-the-job personnel should also regularly participate in professional training, and reasonable talent cultivation programs should be formulated according to industry development needs. Through organizing business training and technical exchange meetings, a relatively complete training and assessment mechanism should be formed to ensure that technical personnel can learn more cutting-edge professional knowledge and technology. Based on talent cultivation programs, talent's professional ability, practical ability, and innovation ability should be enhanced to flexibly apply learned knowledge to practical work, helping the sustainable development of the broadcasting and television engineering industry [9].

2.4 Promote the Improvement and Perfection of Supporting Regulations and Systems

In response to the current situation of insufficient supervision and imperfect supporting regulations and systems in China's broadcasting and television engineering, in-depth industry investigations should be conducted to understand industry development status and future development directions, seeking reasonable and effective technical means for integrated application. Broadcasting and television industry programs should be carefully screened to actively disseminate positive energy and valuable information, prohibiting the dissemination of content that violates regulations or does not conform to socialist core values, with severe crackdowns once such situations are discovered. Broadcasting and television units should establish short-term and long-term goals based on their development status to stimulate the innovation enthusiasm of technical personnel. Talent review institutions should be optimized, and project talent structures should be improved to facilitate the development of broadcasting and television engineering. Through this approach, a favorable industrial development environment should be created to support the healthy and sustainable development of China's broadcasting and television industry [10].

2.5 Promote Technological Innovation and Optimization

Strengthen industrial chain integration, promote technological innovation in broadcasting and television access networks, and focus on developing technology systems, chips, standards, and products according to the evolutionary development needs of new-generation network architectures; for provincial cable television networks, improve the unified access network technology system to reduce network technology upgrading and transformation costs; wired access networks are the basic conditions for network business development and require high attention to technological upgrading; with introduced technical support, network technology should be opened up, resources should be integrated to deepen the appraisal-style transformation of technical support platforms to facilitate the achievement of intelligent development goals for access networks; strengthen the planning and construction of peripheral systems and establish a complete business resource management system to support the development of broadcasting and television engineering construction.

3. Future Development Trends of Broadcasting and Television Engineering Technology

3.1 Digital Technology Transformation and Innovation

In the transformation and development of broadcasting and television engineering technology, digitalization is a major trend. The application of digital technology in the broadcasting and television field can change signal reception and transmission pathways, improve signal transmission efficiency and speed, and provide users with more diversified and high-quality services [11]. Based on their own needs, users can flexibly select programs of interest without time and space constraints, quickly obtain high-quality information with clear picture quality and smooth, stable signal transmission. Currently, most television stations have chosen digital transmission technology, which helps promote high-level development of broadcasting and television engineering technology and brings more convenient services to users.

3.2 Gradual Network-Based Development

Against the backdrop of widespread Internet 普及, numerous information technologies and network technologies have emerged and become indispensable components of social production and daily life. Their integration into the broadcasting and television industry brings opportunities while also posing severe challenges. Therefore, it is necessary to actively promote the transformation and innovation of broadcasting and television engineering technology and its widespread 普及, integrating broadcasting and television advantageous resources based on network information technology for rational allocation and co-construction and sharing. At the same time, scientific and reasonable laws, regulations, and policy systems should be formulated to create space conducive to the high-level development of the broadcasting and television industry.

Additionally, future development of broadcasting and television engineering technology should also emphasize the application of satellite technology, transforming and developing toward satellite live broadcasting. Satellite live broadcasting can expand signal propagation range and speed, enhance anti-interference capabilities, enable timely understanding of important data and information, improve people's quality of life, and promote modern social construction and development [12].

3.3 Rational Application of Cloud Computing Technology

In the new era of innovation and development of broadcasting and television engineering technology, attention should be paid to the integrated application of cloud computing technology, combined with big data technology, to bring greater convenience and services for high-dimensional industry development. As a cutting-edge technology of the era, cloud computing can achieve the integration and utilization of high-quality network resources, selecting reliable service platforms for centralized and unified management of high-quality resources. Based on users' diversified needs, understanding their requirements for uploading data to the cloud or downloading data information from the cloud provides convenient support for daily life, work, and study, achieving optimal resource allocation and utilization. Additionally, applying cloud computing technology in broadcasting and television engineering enables people to conveniently obtain high-quality broadcasting and television signals, reduce costs, and promote high-level development of broadcasting and television engineering technology. It should be noted that technological innovation is an inevitable choice. Along with the development of broadcasting and television media, actively integrating various advanced technical methods that mutually promote and influence each other can fully demonstrate the advantageous value of advanced technology, enhance broadcasting and television engineering technology levels, and expand service scope.

3.4 Automated Operation Management

The integrated application of automation technology in broadcasting and television engineering is the mainstream trend of future technological development. The rational application of automated operation technology can optimize resource allocation, reduce labor intensity and costs, and effectively improve work efficiency [13]. Pilot promotion can be selected initially, such as small satellite transmission stations that only have a small number of program retransmissions and experience program 停播 during late night hours. For such issues, the application of automation technology should be actively promoted, implementing automatic power management mechanisms to automatically control equipment startup and shutdown according to preset programs to ensure normal program broadcasting. Additionally, based on automated operation technology, functions such as no-signal detection, fault detection and early warning, and overvoltage current protection can be realized, enhancing engineering operation

efficiency while endowing broadcasting and television engineering technology with continuous development momentum and vitality.

In summary, the development of broadcasting and television engineering technology in the new era faces severe challenges, but challenges and opportunities coexist. This requires clarifying the current development status of the broadcasting and television industry, identifying future development directions, actively improving supporting regulations and systems, integrating various cutting-edge technical means, consolidating advantageous resources, optimizing industrial structures, and providing higher-quality services for users while enhancing broadcasting and television engineering technology levels.

References

- [1] Sun Xiangjun. Application of network technology in converged media broadcasting and television engineering technology [J]. China Broadband, 2021(5): 74.
- [2] Wang Feng. Reflections on network technology and broadcasting and television engineering technology in the information age [J]. China Broadband, 2021(7): 42.
- [3] Zhong Haifeng. Application of network technology in broadcasting and television engineering technology in the information age [J]. Digital Communication World, 2021(7): 184-185.
- [4] Shan Fei. Application of network technology in broadcasting and television engineering technology in the information age [J]. China New Communications, 2021(1): 171-172.
- [5] Wang Xuemei. Problems and countermeasures in broadcasting and television engineering technology in the converged media era [J]. China Cable Television, 2021(1): 92-94.
- [6] Wen Buren. Application and practice of network technology in broadcasting and television engineering technology in the information age [J]. Electronic Components and Information Technology, 2021(1): 49-
- [7] Zhang Chao. On problems and countermeasures in broadcasting and television engineering technology in the converged media era [J]. Global Premiere, 2021(3): 194.
- [8] Yu Ting. Exploring the application of network technology in broadcasting and television engineering technology in the information age [J]. Global Premiere, 2021(1): 187.
- [9] Zhang Xiaohan. Research on problems and measures in broadcasting and television engineering technology in the converged media era [J]. China Broadband, 2021(4): 52.
- [10] Shi Xiaoyong. Problems and coping strategies in broadcasting and television engineering technology in the converged media era [J]. China Broadband, 2021(7): 154.
- [11] Wang Dajun. Application of network technology in broadcasting and television engineering technology in the information age [J]. Technology Innovation

and Application, 2020(7): 181-182.

[12] Ren Haojian. Analysis of the application of network technology in broadcasting and television engineering technology in the information age [J]. Encyclopedia Forum Electronic Magazine, 2020(7): 183.

[13] Liu Qinghua. Exploring problems and countermeasures in broadcasting and television engineering technology in the converged media era [J]. Charming China, 2020(47): 280.

Author Profile: Li Haiqun (1973-), female, from Liaocheng, Shandong, bachelor's degree, intermediate professional title, research direction: engineering technology.

(Responsible Editor: Zhang Xiaojing)

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

Source: ChinaXiv –Machine translation. Verify with original.