Research on the Convergence of Broadcasting and Network Technologies in the New Era: Postprint

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Abstract

Currently, China has achieved significant progress in its technological level, and information technology has also witnessed tremendous development. Production across various industries has begun to integrate with the Internet. Internet television, as a typical product of information technology, has exerted considerable impact on traditional broadcast television, whose audience numbers are continuously decreasing—this has become a trend. In the face of such circumstances, for broadcast television to achieve sound development, it must engage in comprehensive integration with network technology, which also represents a crucial development direction for the future. This paper analyzes the integration of broadcast television technology and network technology under the new situation and proposes relevant strategies.

Full Text

Exploring the Integration of Broadcast Television Technology and Network Technology under New Circumstances

Abstract: With significant advancements in China' s scientific and technological capabilities, information technology has achieved remarkable development, leading to the integration of internet technologies across various industries. Internet television, a typical product of information technology, has substantially impacted traditional broadcast television, resulting in a continuous decline in its audience base—a trend that has become increasingly evident. Faced with this situation, the healthy development of broadcast television necessitates comprehensive integration with network technology, representing a critical future direction. This paper analyzes the integration of broadcast television technology and network technology under new circumstances and proposes relevant strategies.

Keywords: New Circumstances; Broadcast Television Technology; Network Technology; Integration Exploration

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An analysis of the broadcast television industry' s development reveals that the tremendous growth of network technology poses significant challenges to traditional broadcasting. Due to relatively backward technology and institutional frameworks, broadcast television has experienced a continuous decline in market audience share, necessitating thorough and comprehensive reform. Specifically, it is essential to conduct in-depth research into the advantages of network technology while objectively analyzing traditional broadcast television technology to identify its strengths and promote deep integration between broadcast television and network technology.

1. The Significance of Integrating Broadcast Television and Network Technology

1.1 Promoting Enhanced Transmission Efficiency

Deep integration of broadcast television and network technology can fully leverage the advantages of internet technology, including its convenience and immediacy, effectively increasing transmission capacity and substantially improving transmission efficiency [1]. In the new era, the internet has become deeply integrated with various industries, with interactivity being a particularly prominent feature. Audiences are no longer merely passive information recipients but also active participants in information dissemination. Comprehensive integration of broadcast television and network technology can significantly enhance feedback functionality, improve interactivity, and promote the long-term, effective development of broadcast television.

1.2 Effectively Controlling Operational Costs

Analysis of current traditional broadcast television programs reveals that broadcasting still requires full-time personnel involvement and necessitates collaborative efforts from multiple parties to ensure program quality [2]. The rising popularity of internet television has significantly impacted traditional broadcasting, leading to declining audience numbers and increasing program broadcasting costs, which result in substantial operational expenses. Therefore, it is necessary to fully apply network technology to broadcast television to enable effective information sharing. Specifically, broadcast television stations only need to complete content preparation in advance and upload it directly to achieve distribution across major network platforms and conduct real-time

program editing. This demonstrates that integrating broadcast television and network technology can not only control operational costs but also substantially expand broadcast coverage through network platforms.

1.3 Providing Audiences with Better Experiences

Deep integration of broadcast television and network technology can significantly expand development space, enabling timely dissemination and sharing of large amounts of information. This provides audiences with extensive choice, allowing different viewers to select content according to their needs. Furthermore, network technology can substantially improve broadcast television picture and sound quality, enhancing the overall audience experience [3].

2. Effectively Promoting the Integration of Broadcast Television Technology and Network Technology under New Circumstances

Specifically, it is necessary to strengthen the application of hybrid network on-demand systems and comprehensively develop market and content innovation to facilitate effective integration between the two domains.

2.1 Utilizing Network Technology to Improve Broadcast Television Quality

In today' s context of significant internet technology development, China' s broadcast television industry has been continuously applying network technology to improve program quality, diversify content, and attract larger audiences. While certain achievements have been realized, these improvements remain substantially limited [4]. The widespread application of science and information technology across various fields has led audiences to demand higher standards from broadcast television, such as the currently promoted 4K resolution and high-quality audio-visual experiences, which have become important criteria for video viewing selection. However, traditional broadcast television still operates at 720P resolution, and even with the promotion of 4K set-top boxes, 4K content remains extremely limited, failing to meet public expectations for high-quality broadcast television. To address this situation, China' s broadcast television industry must effectively apply network technology and achieve comprehensive organic integration. This integration involves collaboration in set-top box development and requires diversified resource sharing [5]. For instance, establishing long-term partnerships with relevant video websites such as Youku and iQiyi, coordinating copyright issues, and utilizing built-in applications can effectively optimize and integrate extensive resources, providing users with better and more intuitive experiences. Due to technological limitations, achieving deep integration and comprehensive digitization between broadcast television and network technology in China presents considerable difficulty. Therefore, multiple approaches must be explored to effectively combine the two technolo-

gies, complement each other' s strengths, and promote quality improvements in China' s broadcast television industry.

2.2 Strengthening the Application of Hybrid Network On-Demand Systems

These systems generally utilize the bidirectional characteristics of network technology combined with traditional digital television downstream channels, enabling audiences to customize program content through web portals. While some regions have achieved satisfactory improvements, significant gaps remain in others. To address this situation, it is necessary to effectively utilize telecommunications broadband and expand the internet as a return channel to develop more interactive services. China Cable first established a corresponding hybrid on-demand platform in Hainan, processing related services through the OKTV website. This system pushes programs according to user-customized content and has achieved excellent results. Therefore, by adopting hybrid network on-demand systems, China' s broadcast television industry can develop numerous innovative services, such as VR applications.

2.3 Comprehensively Developing Market and Content Innovation

For China' s broadcast television industry to achieve healthy development under current circumstances, it must enhance its economic benefits. With the significant growth of internet television, people have become accustomed to watching television programs online, substantially impacting the traditional broadcast television market, reducing market share, and decreasing user numbers. The key lies in extensively developing market scope to establish a corresponding cultural market. To accomplish this, it is essential to proactively introduce extensive cultural communication management concepts and invest heavily in the development of the cultural industry to significantly improve the cultural soft power of broadcast television. Additionally, current integration of broadcast television and network technology can enable continuous development of program content. While broadcast television can already satisfy many users' needs in terms of program quantity, audiences in the "Internet Plus" era truly demand rich and high-quality content. Therefore, from a broader perspective, although China' s broadcast television industry possesses substantial productivity, this advantage alone is insufficient to attract adequate audiences. It is also necessary to integrate extensive resources and innovate content to maintain lasting productivity. Comprehensively developing and improving the industry chain and fully integrating related media industries will enable the integration of broadcast television and network technology to develop in a more diversified direction, thereby generating greater economic benefits.

Based on the above discussion, it is essential to recognize that the deep integration of broadcast television and network technology is a long-term, systematic process. With the significant development of internet technology, the convergence of three networks represents an inevitable trend. Therefore, fur-

ther in-depth optimization and upgrading must be conducted across various aspects, including form and business operations. Comprehensive and thorough exploration is required to understand current deficiencies in broadcast television technology and achieve high-level complementarity, thereby effectively promoting innovation in the broadcast television industry and expanding its industrial chain. This approach will ensure the long-term, healthy development of China' s broadcast television industry.

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