Analysis of the Convergence of Broadcasting Technology and Internet Technology: Postprint

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

Abstract

With the rapid development and advancement of science and technology, Internet technology has gradually achieved widespread dissemination and application, playing a significant role in people's daily lives, work, and education. In the development of Internet-based new media, Internet television has emerged and experienced rapid growth. Against the backdrop of the continuously increasing number of Internet users, the audience base of Internet television has been substantially expanded. Traditional broadcasting and television have faced tremendous impact from Internet new media and Internet television; therefore, it is imperative to achieve effective integration of broadcasting and television technology with Internet technology within the network environment, enhance the competitiveness of the broadcasting and television industry, and enable broadcasting and television to attain better survival and development.

Full Text

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ChinaXiv Partner Journal

Abstract: With the rapid development and advancement of science and technology, internet technology has gradually gained widespread popularity and application, playing an important role in people's daily lives, work, and study. In the development of new media based on the internet, online television has emerged and developed rapidly. Against the backdrop of increasing numbers of internet users, the audience base of online television has also been greatly expanded. Traditional broadcast television has faced tremendous impact from internet new media and online television; therefore, it is necessary to achieve effective integration of broadcast television technology and internet technology

based on the network environment, enhance the competitiveness of the broadcast television industry, and enable better survival and development of broadcast television.

Keywords: Broadcast television technology; Internet technology; Integration

Classification: TP393
Document code: A
Article ID: 1671-0134(2017)12-074-02
DOI: 10.19483/j.cnki.11-4653/n.2017.12.024

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1.3 Promoting Sustainable Development

In today's society, information technology is developing rapidly and has occupied an important position in people's work and lives, fundamentally changing lifestyles and habits. The greater convenience and freedom of the internet inevitably creates significant impact and challenges for the traditional broadcast television industry. In the current era of informatization and networking, for the broadcast television industry to achieve new progress, it must actively transform and innovate to realize effective integration of broadcast television technology and internet technology. The emergence of online television provides valuable insights and references for this integration, holding great significance for the development of the broadcast television industry. Traditional broadcast television has suffered considerable impact from the internet, affecting its survival and development. Therefore, the integration of broadcast television technology and internet technology is highly necessary, as it can enhance broadcast television communication functions and promote sustainable development of the industry. Following technological integration, broadcast television can utilize online media to expand its survival and development space and strengthen its communication influence. Simultaneously, technology integration can expand broadcast television's communication scope, breaking through previous limitations imposed by transmitter technology conditions, user reception conditions, and regional relay conditions, thereby further expanding coverage. This is crucial for increasing the broadcast television audience and enhancing its influence. Against the backdrop of increasingly fierce competition in the current media landscape, technological integration can undoubtedly promote sustainable development of broadcast television.

1.1 Reducing Operational Costs

In traditional broadcast television programming, extensive staff coordination was required to ensure normal broadcasting, resulting in high operational costs. Under the impact of the internet, traditional broadcast television audiences

have decreased, further reducing industry economic benefits. Through the integration of broadcast television technology and internet technology, operational costs can be reduced and economic benefits improved. For example, in news programs, previously, telephone operators, audio engineers, captionists, chief editors, responsible editors, and editorial staff were all required to cooperate to complete the work, consuming substantial human and material resources with high production costs [1]. Based on current triple-network convergence, resource sharing can be achieved, allowing broadcast television stations to directly upload and broadcast edited news content to other networks without the need for re-interviewing and editing, significantly reducing operational costs.

1.2 Improving Communication Timeliness

The integration of broadcast television technology and internet technology can improve communication timeliness and expand communication capacity. Previously, broadcast television information flow was limited, with daily information capacity and broadcast time restricted for each channel. On internet platforms, broadcast television information capacity is essentially unlimited, and broadcast processes are completely transformed, allowing all information to be presented on network platforms with greatly increased information capacity. Using digital technology to encode and compress broadcast television programs enables viewers to select and watch content according to their needs while allowing long-term storage and timely updates. A major characteristic of internet platforms is strong interactivity. In online media, traditional audiences are not only information receivers but can also become information disseminators. Through forwarding and reposting, information communication efficiency and coverage can be further enhanced.

2.1 Insufficient Ideological Understanding

The integration of broadcast television technology and internet technology currently remains a relatively emerging field. Many leading cadres at broadcast television stations lack understanding of online television and awareness of the competitive landscape of online media such as media websites and commercial portals. Consequently, during the integration process, it is difficult to identify appropriate paths and directions. Moreover, without proper understanding and recognition of the advantages and attributes of online television, operations in online media suffer from insufficient investment in capital, technology, and human resources, as well as unclear orientation.

2.2 Insufficient Website Planning

Website planning constitutes an important component in the integration of broadcast television technology and internet technology, yet certain deficiencies remain in personnel, technology, equipment, and funding. Although many broadcast television stations have begun experimenting with technology integra-

tion, their primary content remains introductions of the stations and program listings, with insufficient technical updates and unreasonable long-term website planning, resulting in monotonous website formats [2]. Development of audio and video content is relatively limited, failing to fully utilize the convenience and timeliness of the internet. Online television media suffers from obvious deficiencies in network service content, formats, and personalization, with limited depth of content mining and influence scope.

2.3 Insufficient Professional Talent

Regarding professional talent, personnel allocation for broadcast television in the internet environment suffers from unreasonable structures, with vaguely defined responsibilities and a lack of clear regulations, making it difficult to provide adequate support and guarantee during the integration of broadcast television technology and internet technology. Due to the strong technical nature of the field, broadcast television practitioners require high-level professional knowledge and technical skills. Currently, many broadcast television practitioners come from journalism, Chinese language, and other related majors, lacking systematic study of internet technology. Meanwhile, computer operators lack understanding of news writing and program broadcasting, resulting in a shortage of comprehensive professional talent.

3.1 Making Full Use of Digital Technology

In the integration of broadcast television technology and internet technology, both sides can learn from each other's inherent advantages, using digital technology to compensate for traditional broadcast television deficiencies and improve program quality. Although the broadcast television industry has already applied digital technology to some extent, improving program quality, shortcomings remain. For example, audio broadcast programs using analog audio can improve sound quality, while digital quantization sampling may affect sound quality [3]. This can be addressed by adopting strategies such as reducing quantization step size and increasing quantization bit numbers. Through analog-to-digital and digital-to-analog conversion, more ideal sound quality effects can be achieved. Through full utilization of digital technology, program analog sound quality can be improved, defects of traditional audio equipment can be compensated for, and more ideal audio quality can be obtained, thereby enhancing broadcast television program quality.

3.2 Developing Mobile Multimedia Services

In the integration of broadcast television technology and internet technology, network platforms can be utilized to develop mobile multimedia services. Using digital transmission technology to complete broadcast television signal transmission can improve signal quality, reduce capital investment, lower costs, and increase benefits. Mobile multimedia television services can support small

portable mobile terminals such as laptops, mobile phones, and PDAs, and can also connect with terminal carriers like trains, ships, and airplanes, allowing audiences to watch programs anytime and anywhere. Following technology integration, richer program content can be provided, audience groups can be reasonably segmented, and economic benefits can be enhanced [4]. Additionally, new business models can be developed after technology integration, promoting the development of network high-definition services, retaining and leveraging the high clarity advantage of traditional broadcast television programs while integrating the good interactivity of networks to form greater development and competitive advantages.

4.1 Content Innovation

Under the integration of broadcast television technology and internet technology, television program content can be further enriched and innovated. However, previous so-called innovation mostly involved simply increasing the number of broadcast television programs. Although the current hundreds of television channels basically meet audience needs, no essential innovation has been achieved, and broadcast television industry development remains constrained. Broadcast television possesses unique production advantages, but previously failed to effectively realize industrial chain value. Therefore, through the integration of the two technologies, broadcast television industry resources can be integrated and optimally allocated to promote content innovation, improve production capacity, perfect industrial chain development trends, and enable the integration of different industries and media to fully leverage respective strengths and advantages.

4.2 Expanding Market Scope

Currently, China's broadcast television industry focuses heavily on improving economic benefits while neglecting other functional aspects, thereby limiting the industry's market scope. Through the integration of broadcast television technology and internet technology, actively building cultural markets can promote the expansion of broadcast television industry market scope [5]. The broadcast television industry's introduction of advanced cultural communication and management concepts, increased investment in cultural industries, and enhancement of cultural soft power are beneficial for industry development.

4.3 Developing Diversified Economic Means

Previously, the broadcast television industry's production and operation model was relatively single, relying mainly on advertising for economic income. Under the integration of broadcast television technology and internet technology, greater emphasis is placed on diversified economic development, with increased investment in industries such as tourism and real estate. However, due to insufficient professional knowledge, blind investment behavior has created significant

financial risks and economic burdens for the broadcast television industry. In this regard, through the integration of the two technologies, industrial advantages can be fully leveraged to further integrate information technology, multimedia technology, internet technology, and television technology, achieving innovation in industrial chain economic development and enhancing broadcast television industry benefits through diversified economic means to promote further industry development.

Broadcast television has long been the primary means of leisure, entertainment, and information access for people, and has become relatively mature after extensive development. However, with the rapid development of the internet in recent years, traditional broadcast television has faced significant impact. Against this developmental backdrop, for the broadcast television industry to achieve better survival and development, it should actively promote the integration of broadcast television technology and internet technology, integrate the advantages of both technologies, compensate for weaknesses and deficiencies, seek new space for broadcast television development, and promote greater development of the broadcast television industry.

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