

Research on New Media Integration Method Based on Game Model

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Abstract: Radio and television traditional media and new media are not blindly contradictory and conflicting, the two will coexist in the future for some time. The integration and development of traditional media and new media has become possible in terms of national policies and technical support. It is particularly necessary for media units at all levels to formulate appropriate integration plans between traditional media and new media in combination with their own actual conditions. Firstly, this paper conducts an in-depth study on the development status and latest technology of traditional media and new media at home and abroad, introduces game theory into the study of the integration scheme of traditional media and new media, and establishes the game model of the integration scheme. Then, by using the game model and combining the demand analysis of traditional media and new media integration schemes, the original limited TV and the Internet are organically combined, and an IPTV system is established to realize the integration of traditional media and new media. The results show that the system achieves the expected goal and has certain theoretical value and popularization significance.

1 INTRODUCTION

In the new media era, the development of information technology has become an important development direction in China. China has invested a lot of energy in information terminal, information satellite and other technologies, and the media industry has obtained significant space for development, and the media has made remarkable progress in all aspects of technology, resources and policies (Basak, G. K., 2023). With the continuous development and progress of information, it promotes the industrialization of media gradually. With the rapid development of media industrialization, the operation mode of media companies is no longer simple, they have obtained more and larger markets, and they have achieved expansion in various media fields, so as to meet the diversified needs of consumers (Yu, G., 2022). With the integration and transformation of media, the mutual cooperation between new media and traditional media has gradually become its development trend, and media integration has achieved a win-win situation for both traditional media and new media. Compared with a single media, the integrated communication mode of various media usually has a wider market, and has significant advantages in information acquisition and dissemination (Shan, X. W., 2021).

With the advent of the information age, social economy and culture have developed rapidly. But at the same time, it is difficult to accurately position the consumer group through a single way, and various factors such as the audience's family background, birth years, living standards, and education status need to be fully considered (Liu, H. A., 2021). At the same time, the different life concepts and lifestyles of the audience also lead to the relative dispersion of the audience group. In the modern market environment, what it needs to strive for is the dissemination of "fragmented" information and consumption choices of user groups. Based on this, the mutual integration of new media and traditional media can better meet the specific market needs (Li, S., 2022).

Traditional media have strong authority and credibility, and in the long-term development, they usually have a mature and perfect media system. Industry practitioners also need to have sufficient knowledge reserves and experience. In the face of various news and information, they need to be able to choose and distinguish correctly (Gan, Z. A., 2021). However, the continuous development of traditional media has also accumulated a large audience, mainly because of its high social influence and credibility, and has an important position in the media market. As far as the development of the media industry is concerned, in the face of relevant changes brought

by new media, more attention should be paid to the advantages of traditional media, and in the long-term development, audiences can still exert corresponding influence on public opinion (Wu, Y. J., Wang, J. X.).

The continuous development of new media is directly related to the support of information technology. In the era of new media, the network has become an indispensable part of people's actual life. Internet technology is widely used in both life and work (Liu, Z. J., 2021). In this case, the role of new media has been fully brought into play, and the audience can become the receiver and publisher of information through relevant Internet technologies, and complete the dissemination of information. From this, it can be seen that new media has significant advantages in both the scope and speed of information dissemination. At the same time, another important advantage of new media is its interactivity, which provides a new communication channel and bridge between the media and the audience. Through interaction, the audience of new media can be consolidated and get corresponding satisfaction (Huang, F. F., 2021).

Based on the analysis of the advantages of new media and traditional media, it can be seen that the analytical ability of big data of new media should be fully utilized to ensure communication and contact with the audience, so as to effectively improve the speed of information transmission of traditional media. More information can be obtained through contact and communication with the audience, which can effectively make up for the limitations of traditional media (Hu, W. F., 2020). For new media, innovation in interaction is more obvious. For example, relevant new media platforms such as wechat public account, Weibo and Tiktok have been widely used in people's real life, and have a wide user base, whose information content also covers all aspects. For new media, although it has obvious advantages in communication and can fully meet people's spiritual needs, it also needs to improve the quality and depth of information content. Relevant supervision and measures are not perfect, which also shows the weakness of new media. It can be seen that the integration of traditional media and new media can effectively promote the continuous development and progress of the industry. Therefore, the integration of the two has significant feasibility, and can complement and support each other's advantages.

2 METHODS

2.1 Game Equilibrium Algorithm Between Traditional Media and New Media

In reality, many decision-making activities are sequential, often choosing behaviors in turn rather than co-choosing behaviors. Moreover, the player who chooses behaviors later can see the selection content of the player who chooses behaviors first, so the decision of the latter player is affected by the decision behavior of the previous player. Each player will make its own optimal strategy based on all the information it has at the time of decision. In other words, the strategy of each player is a function of all the information that the decision maker has at the time of decision making. In chess, for example, both sides move one after the other, and each person's decision at each moment is a function of the information they have from the previous series of decisions. Another example is the selection of real estate development and the rotating bidding in auction activities. Sequential selection is very different from simultaneous selection at once, so the Games formed by such decision problems are very different from static games, and we call them Dynamic Games or Sequential Move games.

In dynamic games, players choose their actions not simultaneously but successively, and the question for each player to consider is what response strategy the other player will take if I adopt this strategy. The feature of how the strategy I take will affect my own and my opponent's future strategy choices makes dynamic games use an extended approach to describe and analyze dynamic games in terms of representation.

The extended form of a dynamic game is also called a "game tree". The selection behavior of each player in dynamic game has a sequence. The decision section corresponding to the first action selection is called "initial section", and all the information contained in each selection node is called "information set". The choice behavior of each player will form a connected game stage in turn, so the choice behavior of the player in the dynamic game is often called a stage. In the dynamic game, there may be several game choices at the same time, then the simultaneous choices of these players also constitute a stage. A dynamic game has at least two stages, so dynamic games are sometimes called multi-stage games.

Compared with matrix representation, the expansion formula "expands" mainly the strategic

space of the players, that is, when a certain player acts. What strategies are available for each move, and what information is known about the game. Since the extended form can reflect the order of player selection and the stage of the game, it is the best method to represent the dynamic game (the number of stages and the number of optional behaviors of players are small). Because dynamic games are often expressed in extended form, they are sometimes called "extended games".

In the first round game of the integration of old and new media, the radio and television department should choose whether to integrate traditional media and new media. At this time, the traditional media and new media become the players in the game. There are two choices for new media: the introduction of new media alone or the integration with traditional media (referred to as integration and non-integration); There are also two possibilities for traditional media: rejecting the integration of new media alone and merging with new media (integration and non-integration).

The action sets of traditional media and new media are respectively (integration, non-integration) and (integration, non-integration). New media strategies include: (integration, traditional media exist alone), (non-integration, traditional media exist alone), (integration, traditional media accept integration), (non-integration, traditional media accept integration).

The process of strategic selection in the radio and television department is the process of measuring the cost/benefit of various strategies. In order to explain under what circumstances the broadcasting and television departments should adopt the integration of old and new media as the optimal strategy, this paper, based on the Nash equilibrium model, uses the mixed strategy Nash equilibrium model to propose the following game equilibrium algorithm between traditional media and new media:

Step 1: In order to calculate the costs and benefits of various strategies, make the following assumptions:

R is the probability of traditional media choosing "convergence"; $0 \leq R \leq 1$

A is the normal expenditure of "non-integration" of traditional media, which also needs to be paid after the deployment of new media;

$A \geq 0$ F is the loss suffered by the "fusion" of traditional media under the influence of new media;

$F \geq 0$ K is the revenue obtained from new media when traditional media "merges";

$K \geq 0$ B New media does not integrate traditional media with normal benefits, the integration of traditional media will also get the same benefits;

$B \geq 0$

Q The probability of new media merging with traditional media; $0 \leq Q \leq 1$ C is the cost of new media fusion;

$C \geq 0$

D additional income after new media integration; $0 \leq D \leq 1$

Step 2: Based on the above assumptions, the following payment function can be obtained

Table 1: Media convergence strategy matrix.

Strategy matrix		Traditional media	
		Integration(R)	Non-integration(1-R)
New media	Integration(Q)	D+B-C -F-A	B-C -A
	Non-integration(1-Q)	B K-A	B -A

Step 3: Analyze the game model to get the optimal strategy for developing new media

Given R, the expected benefits of new media integration and non-integration are:

$$L(1, R) = (D+B-C)R + (B-C)(1-R) \quad (1)$$

$$L(0, R) = BR + B(1-R) = B \quad (2)$$

In order to integrate new media and traditional media, (1) \geq (2) should be made, that is:

$$(D+B-C)R + (B-C)(1-R) \geq B \quad (3)$$

That is, when $R \geq C/D$, radio and television media choose the integration of old and new media as the optimal strategy

Step 4: By analyzing the game model, it is concluded that given Q, the optimal strategy for developing traditional media, the expected returns of traditional media choosing integration and non-integration are as follows:

$$M(1, Q) = (-F-A)Q + (K-A)(1-Q) \quad (4)$$

$$M(0, Q) = -AQ - A(1-Q) = -A \quad (5)$$

To integrate traditional media options, (4) \geq (5):

$$(-F-A)Q + (K-A)(1-Q) \geq -A \quad (6)$$

That is, when $Q \leq K/(F+K)$, traditional media choose and integrate the optimal strategy. The above is the derivation process of how new media and traditional media choose the optimal strategy. Of course, there is no relevant standard on how to calculate these costs and benefits. Comprehensive consideration of the existing hardware and software equipment, personnel, pipe network, market space,

investment capital, development space and other comprehensive considerations, scientific demonstration of each parameter coefficient, in order to scientific and accurate decision-making.

In the specific integration process, whether the radio and television department and the telecommunications department cooperate to integrate the old and new media, or the radio and television department upgrades its network and equipment to cater to the new media, it can be said that from the perspective of the implementer, the traditional media and the new media should understand each other as much as possible, so the game of the integration of the new and old media is a complete information game. Choosing a reasonable integration strategy can maximize cost savings, improve social and economic benefits, and obtain the highest benefit/cost ratio for the radio and television department.

2.2 System Implementation

The management and client interfaces use a unified Web interface. The client can watch all kinds of TV programs by obtaining free player software. The core of the system is a set of complete online video on demand business platform, on this platform can be freely completed program acquisition, release, certification, advertising, statistical analysis and so on. It is based on distributed multi-server system, is a real network streaming media management service system.

The design principle of this system is firstly positioned in the advanced design of streaming Media. With Windows Media as the development platform, it has full technical advantages, accounting for more than 90% of the world's streaming media applications. The video service management system of GT-NTV system is based on this excellent video service platform. Constitute the domestic advanced technology, design combination program.

From the hardware server, server-side running software, database, Web side, we have selected excellent systems for users, and through strict testing, practice, thus established the overall has good reliability.

At the same time, the entire system includes streaming media server, acquisition and production system, content management, load balancing and other technologies, supporting 100,000 system users, in the event of failure to ensure the normal operation of the system and fault recovery open background management system. Provide a good system expansion and maintenance interface In the design

of GT-NTV system management system from the structure of the full consideration of the expansion of functions and user customization requirements, to provide users with a set of flexible management of self-maintenance design ideas.

Support multi-server system management and scheduling; Supports mainstream media formats, and has an expanded interface; Support the management and scheduling of multiple Windows Media live broadcast devices; Dynamic client program access generation interface, providing a variety of program publishing styles; Client-side content retrieval is flexible, with rich Check Box combination options.

It provides a variety of charging modes and user-defined charging standards for third parties, and can load various forms of tariff policies. The user and program information of the system back-end management system can be created separately or obtained from the table structure of other existing integrated business systems that provide standard interfaces. Similarly, because the specific business billing is dependent on different business systems, the user and program information or authentication billing data structure of the GT-NTV system can also be opened for the integrated business system, because the current popular central business system has a strong external database call interface. The user information and program information of GT-NTV system can be separated independently. The system integrates WWW server and database server, so that the system has perfect data management, identity authentication, access control, service record, billing management and other complete functions.



Figure 1: The system implementation.

3 CONCLUSION

In the era of new media, information is spreading at a geometric speed, which leads to the fact that information is no longer as scarce as traditional

media. Based on this, new media takes "traffic is king" as the guidance, and pushes gimmicky and fragmented information content to network users, so as to attract users' attention and prompt them to fall into the trap of shallow reading. As far as traditional media and newspapers are concerned, due to their professional, rigorous and profound information characteristics tempered by a long history, they need to be inherited in the new media era and produce authoritative and authentic information, so as to cope with the interference of traffic information and promote the full play of the correct public opinion guidance function. Attention should be paid to the dissemination of information should be authoritative, true, objective and accurate information, media workers should strengthen the dissemination of information and expand the breadth of information dissemination.

Firstly, this paper conducts an in-depth study on the development status and latest technology of traditional media and new media at home and abroad, introduces game theory into the study of the integration scheme of traditional media and new media, and establishes the game model of the integration scheme. Then, using the game model, combined with the actual situation, the local traditional media and new media integration scheme system is designed to realize the integration of traditional media and new media.

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