Audience Analysis and Program Customization Strategies for Broadcasting and Television under the Background of Big Data

Hongtan Li, Zefeng Lin

Shaanxi University of Science & Technology, Xi'an, 710021, Shaanxi, China

lihongtan@sust.edu.cn, 648008941@qq.com

Keywords: Big data technology; Radio and television industry; Audience analysis; Program customization; Challenges and countermeasures

Abstract: Facing the increasingly fierce competition environment and changing audience demand in the radio and television industry, big data technology provides a brand-new perspective and tools for the industry. This article mainly discusses the application of big data technology in radio and television industry, especially its role in audience analysis and program customization strategy formulation. Firstly, this article summarizes the background and significance of big data technology, and analyzes the importance and potential of big data in radio and television industry. Then, the article discusses in detail the audience analysis of radio and television under the background of big data, including the overview of big data technology, the sources and types of audience data, the analysis of audience characteristics and behavior patterns, and the analysis of audience feedback and emotion. On this basis, the article further studies the formulation and implementation of program customization strategy, including the theoretical basis of customization strategy, program content customization based on big data, program scheduling and broadcasting strategy, and innovation of interaction and participation mechanism. More innovative modes and application scenarios will be explored to promote the sustainable development of the industry.

1. Introduction

With the rapid development of information technology, big data technology has become an important force to promote changes in all walks of life. In the radio and television industry, this trend is particularly obvious [1]. Facing the increasingly fierce competitive environment and changing audience demand, the radio and television industry is experiencing unprecedented transformation pressure [2]. However, challenges often coexist with opportunities [3] Big data technology provides a brand-new perspective and tools for the radio and television industry, enabling it to understand the audience more deeply and optimize the content production and distribution strategies, so as to stand out from the competition [4].

In the radio and television industry, audience analysis has always occupied a decisive position [5]. Traditional audience analysis methods often rely on limited sample data and empirical judgment, and it is difficult to comprehensively and accurately grasp the characteristics, preferences and behavior patterns of the audience [6]. The introduction of big data technology has brought revolutionary changes to audience analysis. By collecting and analyzing massive audience data, the radio and television industry can more accurately locate the target audience, understand their needs and expectations, and thus formulate more targeted program strategies [7]. Program customization strategy is also the key to enhance the media competitiveness and meet the needs of diverse audiences in the current radio and television industry [8]. With the support of big data, the radio and television industry can customize the program content according to the individual needs of the audience, thus improving the satisfaction and loyalty of the audience [9]. This will not only help to enhance the market share of the radio and television industry, but also promote its sustainable development.

In view of the importance and potential of big data technology in radio and television industry, this study aims to explore how big data can help radio and television industry analyze audience

  DOI: 10.25236/ieesasm.2024.025

characteristics, preferences and behavior patterns more accurately. By systematically studying the application of big data in radio and television industry, this study hopes to provide a set of scientific and effective audience analysis methods and program customization strategies for the industry.

2. Analysis of radio and television audience under the background of big data

2.1. Overview of big data technology

Big data technology is the core driving force in the information age, which is profoundly changing the operation mode of the radio and television industry. It covers many links such as data collection, storage, processing and analysis. Through advanced algorithms and models, hidden values and laws can be mined from massive and heterogeneous data [10]. In the field of radio and television, big data technology not only improves the speed and efficiency of data processing, but also realizes deep insight into audience behavior, which provides strong support for precision marketing and content innovation.

2.2. Sources and types of audience data of radio and television

Radio and television audience data come from a wide range of sources, as shown in Table 1.

Table 1 Radio and Television Audience Data Sources

Data Source Category	Data Type	Description
Viewing Data	Structured	Includes quantitative metrics such as viewership ratings, watching duration
Social Media	Unstructured	User comments, discussions, etc., on social media platforms
User Feedback	Unstructured	Direct feedback provided by viewers via phone, email, etc.
Survey Questionnaires	Structured	Specialized surveys on audience viewing habits and preferences
Online Behavior	Structured/Unstructured	Browsing and interaction records of users on radio and television websites or apps
Third-Party Research	Structured	Audience analysis reports published by market research institutions

These data types are diverse, ranging from structured ratings data to unstructured social media comments and user feedback. By integrating these data sources, the radio and television industry can understand the audience's viewing habits, interest preferences and emotional attitudes in an all-round and multi-angle way, laying a solid foundation for subsequent audience analysis and program customization.

2.3. Analysis of audience characteristics and behavior patterns

Using big data technology, the radio and television industry can make detailed feature division and behavior pattern analysis for the audience. Through cluster analysis and association rule mining, we can reveal the age, gender, geographical distribution and other characteristics of different audience groups, as well as their behavior patterns such as viewing time, channel selection and program preference. This information is of great significance for formulating targeted program strategies and optimizing content layout.

2.4. Audience feedback and emotional analysis

Audience feedback is an important basis for evaluating the quality and effect of programs. Big data technology can automatically identify and extract feedback information such as user comments and barrage on social media through text mining, emotional analysis and other methods, and then analyze the audience's emotional attitude and satisfaction with the program. Table 2 shows the process of collecting audience feedback from different channels, emotional analysis and satisfaction rating by using big data technology, aiming to help program producers find and solve problems in

time and provide valuable reference for program innovation and improvement.

Table 2 Audience Feedback Analysis

Feedback Channel	Feedback Content	Sentiment Analysis	Satisfaction Rating	Remarks
Social Media	"This episode is so funny, I laughed my stomach ache!"	Positive	5 Stars	High Satisfaction
Bullet comment	"The plot is dragging, a bit boring."	Negative	2 Stars	Needs Plot Improvement
Social Media	"The host is natural, I really like it!"	Positive	4 Stars	Host Well-Received
Forum Discussion	"The ending is too rushed, not explained clearly."	Neutral to Negative	3 Stars	Ending Needs Optimization
Bullet comment	"The special effects are great, a visual enjoyment!"	Positive	5 Stars	Special Effects Praised
Social Media	"Too many ads, affecting the viewing experience."	Negative	1 Star	Need to Reduce Ads

This not only helps to find and solve the problems in the program in time, but also provides valuable reference for program innovation and improvement.

3. Formulation and implementation of program customization strategy

3.1. The theoretical basis of customization strategy

The formulation of program customization strategy needs a solid theoretical foundation as support. Personalized communication theory, precision marketing theory and user portrait technology all provide scientific basis and methodological guidance for program customization. These theories emphasize the audience as the center, and customize the program content according to the audience's individual needs and preferences, thus improving the attraction and competitiveness of the program.

3.2. Program content customization based on big data

With the support of big data, the radio and television industry can realize accurate customization of program content. Through audience analysis, we can deeply understand the needs and preferences of different audience groups, and then tailor the program content for them. As shown in Table 3:

Table 3 Precision Customization of Program Content in Radio and Television Industry Supported by Big Data

Audience Group	Demand Analysis	Preference Analysis	Customized Content Strategy
Young Audiences	Seek novelty and excitement	Prefer short videos, high interactivity	Produce fast-paced, creative short video series, increase live interaction segments
Family Audiences	Favor warmth and educational value	Enjoy parent-child programs, documentaries	Launch family education programs, such as parent-child reading, science documentaries
Older Audiences	Need clear, easily understandable content	Prefer classic operas, health and wellness	Air classic opera reruns, produce health and wellness knowledge lectures
Sports Fans	Pursue real-time, professional analysis	Love football, basketball, etc.	Live broadcast sports events, invite experts for post-game analysis, create sports-themed programs
Sci-Fi Enthusiasts	Like innovation, rich imagination	Prefer sci-fi movies, TV series	Import and produce high-quality sci-fi films and TV shows, host sci-fi themed discussion sessions

The above table shows how the radio and television industry passes audience analysis and preference analysis with the support of big data. This customized program content can better meet the needs of the audience and enhance their viewing experience.

3.3. Programming and broadcasting strategies

Programming and broadcasting strategy play an important role in the process of program customization. This link is not only related to the presentation of the program content, but also directly affects whether the program can successfully attract and retain the target audience. In order to achieve this goal, we need to deeply understand and analyze the audience's viewing habits and preferences.

First of all, we should study the audience's needs and preferences for different types of programs in different time periods of the day. For example, in the morning, the audience may be more inclined to watch news information or relaxing programs to start a new day. Prime time in the evening is the peak time for families to gather and watch TV dramas or variety shows. By reasonably arranging the broadcast time and sequence of programs, we can ensure that we can provide the audience with the content they are most interested in at every key time, thus attracting their attention to the maximum extent.

Through the comprehensive analysis of historical viewing data, social media interaction, audience feedback and other multi-dimensional information, we can establish a perfect prediction model. This model can help us to know in advance which program contents are more likely to resonate with the audience and which program forms are more popular in the market. Based on these prediction results, we can flexibly adjust the broadcast strategy. For example, for programs with high ratings, we can give more publicity resources and broadcast time to further expand their influence. For programs with low ratings, we can consider optimizing the content or adjusting the broadcast time to avoid wasting resources. Through such dynamic adjustment, we can continuously improve the viewing effect of the program, and then enhance the share and competitiveness of the program in the market.

3.4. Innovation of interaction and participation mechanism

In the context of big data, the innovation of interaction and participation mechanism has become the key to enhance the attraction and competitiveness of programs. Through social media and online surveys, we can strengthen interaction and communication with the audience and get their feedback and opinions in time. At the same time, you can also use big data technology to analyze and mine the audience's participation behavior and data, and provide them with a more personalized interactive experience. This innovative interaction and participation mechanism can enhance the loyalty and stickiness of the audience and inject new vitality into the sustainable development of the radio and television industry.

4. Conclusions

Through in-depth discussion on the application of big data in audience analysis and program customization strategy of radio and television, this study finds that big data has core value for enhancing the competitiveness of radio and television industry and meeting the needs of diverse audiences. Through the analysis of big data, the radio and television industry can more accurately understand the characteristics, preferences and behavior patterns of the audience, so as to formulate more targeted program strategies and improve the attractiveness and ratings of programs.

With the continuous progress of technology and the continuous accumulation of data, big data will penetrate into all aspects of radio and television more deeply, and from content production to distribution and promotion, it will achieve more accurate customization and personalization. At the same time, big data will also promote the deep integration of the radio and television industry with other industries, such as cross-border cooperation with e-commerce and social media, which will bring new growth points and business models to the industry. It is foreseeable that big data will become an important driving force for the transformation and upgrading of the radio and television

industry.

References

[1] Wei Tao. Application of safety broadcast monitoring and supervision system in the field of radio and television engineering [J]. Television Technology, 2023, 47(1):201-203.

[2] Zeng Chuisen. Design and Application of Radio and Television Integrated Supervision Platform Based on IT Technology [J]. Television Technology, 2024, 48(7):206-210.

[3] Zuo Huaishan. Application of big data technology in radio and television monitoring [J]. Television Technology, 2023, 47(9):197-199.

[4] Hu Ming. Analysis of application strategy of big data technology in radio and television monitoring [J]. Television Technology, 2022,46(09):184-186.

[5] Wang Xiaotao, Zhao Shihu. Research on the Application of Big Data and 5G Technology in Radio and Television Industry [J]. Television Technology, 2021,45(10):18-20.

[6] Yao Wei. Research on the integration and development of big data technology and TV news editing [J]. TV Technology, 2020,44(01):37-39.

[7] Wang Liang. Reflections on the development of local radio and television stations' media integration [J]. Television Technology, 2019,43(13):57-59.

[8] Huang Jiao. Visual display system of news big data in county-level media center [J]. Television Technology, 2019,43(21):50-52.

[9] Zhao Wei. Analysis on the application strategy of big data and media-melting technology in radio and television [J]. Television Technology, 2019,43(18):18-19+22.

[10] Peng Jiewen. Technical Realization of Intelligent Radio and Television Monitoring System [J]. Television Technology, 2022, 46(11):213-216.