

Postprint: Big Data Application in Television Art Quality Assessment in the Context of Media Convergence

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Abstract

Television comprehensive effectiveness evaluation indices play an important role in the industrialization and marketization of China's television industry, with ratings serving as the key indicator. In the era of media convergence and big data technology, traditional sample-based ratings measurement methods struggle to capture the omnimedia performance of television programs, and constructing a new television comprehensive effectiveness evaluation index system in the omnimedia environment using big data technology has attracted considerable attention.

Full Text

Big Data Applications in Television Art Quality Assessment Under Media Convergence

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Abstract: The comprehensive television effectiveness evaluation index plays a crucial role in the industrialization and marketization of China's television industry, with audience ratings serving as its key metric. However, in the era of media convergence and big data technology, traditional sample-based ratings measurement can no longer adequately capture the full-media performance of television programs. Consequently, constructing a new comprehensive television effectiveness evaluation indicator system using big data technology in an all-media environment has become a topic of significant interest.

Keywords: media convergence; evaluation index; big data

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1. The Urgency of Constructing a Comprehensive Television Effectiveness Evaluation System in an All-Media Environment

1.1 The “Ratings-Only” Approach Urgently Needs to Be Halted

Throughout three decades of rapid development in China’s television industry, one keyword has remained inescapable: “ratings.” Whether assessing a television program’s brand value or artistic merit, or guiding program revision, production, evaluation, and advertising operations, ratings have served as the “hard currency” reflecting television content’s value. Some stations have even adopted a ratings-based elimination system, where programs are renewed or canceled solely on their ratings performance. For a long time, ratings functioned as a fulcrum for measuring television institutions and content, driving the industry’s rapid growth. Nevertheless, evaluation systems centered primarily on ratings have significant shortcomings. Television ratings surveys have traditionally relied on diary methods and people meters, heavily dependent on data from CSM Media Research, raising questions about the objectivity of ratings themselves. Moreover, ratings cannot fully represent a television institution or program’s media influence. Media influence construction involves resource allocation across three stages: contact, retention, and enhancement. Ratings only address the first stage, while measurement of higher-level impacts remains largely unexplored territory.

1.2 New Media’s Impact on Traditional Television Market Space

In 2017, the total television drama copyright market reached 45 billion RMB, with the traditional TV drama copyright market accounting for 23.8 billion RMB (20% growth) and the all-network drama copyright market reaching 22 billion RMB (40% growth). Industry experts predict that by 2018, the all-network drama copyright market will surpass the traditional TV drama market, with the total drama copyright market expected to reach 55 billion RMB. Amidst this new media onslaught, satellite TV stations’ total advertising revenue continues to grow, but their market share is declining. Both ratings and advertising fees for flagship programs have experienced varying degrees of decline.

1.3 Network-Station Collaboration Becomes the Norm

Beyond exclusive broadcasting, satellite TV stations increasingly employ multi-platform simulcasting to “dilute” drama acquisition costs. However, the “one drama, two stars” policy has blocked the path of multiple satellite stations jointly purchasing dramas, prompting television media to extend cooperation

offers to video websites. Network-station collaboration in purchasing drama broadcast rights has become the new normal. Some powerful television media organizations have also leveraged their content advantages to thrive on independently operated new media platforms, such as Hunan Broadcasting System's Mango TV, which focuses on "spin-off" episodes and derivative content from satellite broadcasts and has cultivated a substantial loyal audience through on-line exclusive broadcasting.

2. Main Indicators for Big Data Assessment of Television Art Quality

As a mass art form, television has developed preliminary consensus among viewers regarding quality evaluation indicators through long-term viewing experiences, establishing certain key metrics. As early as 2006, China Central Television proposed the concept of "green ratings," emphasizing the equal importance of "ratings" and "influence." In 2011, the former State Administration of Radio, Film, and Television explicitly articulated the "three no's principle" to address the chaos of ratings worship. Yu Guoming, Executive Dean of the School of Journalism and Communication at Beijing Normal University, proposed a comprehensive television effectiveness evaluation index system—a multi-indicator, online-offline integrated framework comprising six primary indicators: "awareness, attention, viewership, recommendation, satisfaction, and concentration." This paper focuses on three key elements—audience ratings, audience satisfaction, and social influence—as the main indicators for big data assessment of television art quality.

2.1 Audience Ratings

Audience ratings, a long-standing metric, differ fundamentally from traditional sample-based statistics. Big data ratings surveys conduct comprehensive counts of the entire audience population, producing virtually error-free results. While CSM's traditional television program ratings surveys relied on household people meters and set-top box records, big data technology can analyze audience demographics—including age, gender, cultural differences, regional variations, and ethnic distinctions—beyond mere ratings and market share. For instance, Mango TV's "Adorable Kid Adorable Home" is a parent-child reality show where post-1990s viewers constitute the primary audience. Furthermore, real-time on-demand volumes for television programs across different time slots can be presented as curve graphs.

2.2 Audience Satisfaction

If video content is the product, audience satisfaction represents viewers' evaluation of and attitude toward that product. Taking television dramas as an example, audience evaluation encompasses both overall comprehensive impressions of the entire work and assessments of individual elements—including plot

development, directing, acting, props and costumes, continuity errors, as well as satisfaction with product placement, broadcast duration, and broadcasting platforms. Satisfaction data can be collected through numerical percentage scores or through satisfaction-level categorizations, both directly reflecting audience satisfaction. Such feedback enables producers to identify content creation weaknesses and audience preferences, serving as a touchstone for evaluating creative team capabilities.

Big data calculation involves both structured and unstructured data. Statistics show that only 5% of digital data is structured and suitable for traditional databases. Television ratings are typical structured data that can be directly analyzed after web scraping, whereas satisfaction rates and influence metrics primarily consist of unstructured data. Big data assessment of television satisfaction and social influence mainly includes the following aspects: First, viewing behaviors such as repeated watching, fast-forwarding, rewinding, and slow-motion playback reflect audience attention to specific segments or episodes, or dissatisfaction with slow pacing that prompts frequent fast-forwarding. Second, rating and scoring mechanisms and danmaku (bullet comment) functions on video platforms like Youku and Tencent Video. While rating systems directly provide satisfaction data, they prove less effective as internet audiences prefer interactive comments and danmaku over questionnaire-style scoring. Since its multi-platform release, the web drama “Tribes and Empires: Storm of Prophecy” has generated substantial discussion, accumulating 2.85 million danmaku comments and nearly 300,000 reviews. Word cloud analysis of danmaku reveals concentrated discussion on Mu Ru Hanjiang (played by Shawn Dou) and Shuo Feng Heye (played by Yin Zheng), with Shuo Feng Heye’s romantic storylines with Mu Yun Yanshuang and Jin Zhuhai receiving particular attention. Third, related topic popularity on social platforms such as Weibo and WeChat. Fourth, interaction, learning, and sharing about television works on knowledge platforms, including academic sites like CNKI, entertainment sites like Douban, relevant articles on major portal websites, and WeChat public accounts. Fifth, keyword search indices on search engines like Baidu, Sogou, Google, and 360 Search. Additionally, industry extensions related to television programs are reflected in keyword searches on e-commerce platforms like Taobao and JD.com, as well as impacts on tourism and leisure industries.

2.3 Social Influence

As a form of mass culture, television directly influences people’s ideological concepts and behavioral preferences, generating comprehensive social impacts. An outstanding television program upholds correct mainstream values, possessing both contemporary relevance and educational attributes that cultivate audience sensibilities and provide aesthetic enjoyment. Film and television works affect society on multiple levels, from superficial to profound. At the shallow level, brands of milk consumed, clothing styles worn, or home decoration featured in dramas become trendy. At the deeper level, the hit drama “In the

Name of the People” deterred corrupt officials and brought the sensitive topic of anti-corruption into public discourse, achieving unprecedented nationwide anti-corruption awareness. The depth of impact from such anti-corruption works was unparalleled. Similarly, “If You Are the One” reflects contemporary mate selection preferences, mirroring current attitudes toward love, values, and lifestyle pursuits.

3. Digital Investigation of Ratings, Satisfaction, and Social Influence

3.1 Digital Investigation of Ratings

Big data ratings statistics employ total sample calculation rather than traditional sampling methods, offering significantly higher accuracy. Unlike the singularity of traditional television ratings surveys, all-media environment ratings investigation is more diverse and complex, with overlapping and intersecting statistical data requiring rational separation. First, all television audience viewing must be counted, including regular TV users, digital TV users, IPTV users, and internet TV users. As cable television becomes increasingly digital and intelligent, television user viewing data becomes more objective. Second, online video portal playback statistics must be collected, including both online and offline viewing. For instance, ratings data for specific videos can be obtained from new media platforms like Youku, iQiyi, Tencent Video, and Mango TV. As long as audiences’ PCs or mobile devices are connected to the internet, precise viewing habits can be captured for big data analysis. Manual statistics are required for audiences’ offline downloads and repeated viewing. Third, playback data from urban bus TVs, subway media, in-flight entertainment, and outdoor screens must be collected. Data accuracy from these mobile vehicle media remains questionable due to uncontrollable viewing behaviors. Finally, offline playback on PCs, iPads, radios, and DV players, as well as content distributed as discs or digital media commodities, must be accounted for.

3.2 Digital Investigation of Satisfaction and Social Influence

Big data encompasses both structured and unstructured data. As noted, only 5% of digital data is structured and suitable for traditional databases. The investigation of satisfaction and social influence primarily relies on unstructured data from the following sources: First, viewing behavior patterns such as repeated watching, fast-forwarding, rewinding, and slow-motion playback. Second, interactive features on video platforms including ratings, reviews, and danmaku functions. Third, topic popularity on social platforms like Weibo and WeChat. Fourth, discussions and sharing on knowledge platforms including academic sites (CNKI), entertainment sites (Douban), portal websites, and WeChat public accounts. Fifth, keyword search indices from search engines such as Baidu, Sogou, Google, and 360 Search. Additionally, industry extensions are reflected in keyword searches on e-commerce platforms (Taobao, JD.com) and impacts

on tourism and leisure industries.

Overall, employing big data to assess television art quality enables comprehensive and accurate evaluation, providing quality prediction and assessment for television art reception, production, and broadcasting. This establishes a robust television art evaluation system with significant implications and value for the development of television art and cultural industries, offering decision-making references.

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

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