

The Impact of Digital Media on Sports Management

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Abstract: The objectives of this research study were (1) to analyze the transformative impact of digital media on sports management practice in Chengdu, (2) to explore the integration of digital platforms and the adoption of advanced technologies in the sports industry, and (3) to identify the challenges faced in the digital age. This hybrid research study employed a combination of quantitative data from online surveys, qualitative insights from semi-structured interviews, and content analysis. The research involved different stakeholder groups in Chengdu's sports industry, aiming to provide a comprehensive perspective on the utilization of digital media in sports management. Major Findings/Results: (1) The field of sports management in Chengdu has significantly shifted towards digital media, with digital platforms playing a pivotal role in fan participation, marketing strategies, and brand building. Personalized and interactive content has become increasingly preferred by consumers. (2) The study highlighted the importance of advanced technologies such as AI, VR, and 5G in enhancing fan experience and operational efficiency in the sports industry. (3) Key challenges identified include digital rights management, online content regulation, and maintaining fan engagement in a competitive digital landscape. The comparative analysis with global trends revealed both unique and common digital sports management practices in Chengdu. The study underscored the necessity for sports organizations to adapt to the evolving digital environment while considering ethical and regulatory aspects. This research contributes to the academic discourse on sports management in the digital age, offering valuable insights for practitioners and policymakers. It underscores the transformative role of digital media in sports management and advocates for innovative strategies, cultural sensitivity, and ethical integrity in Chengdu's digital sports landscape.

Keywords: Digital media, sports management, online platform, advanced sports technology, digital marketing, sports media consumption, digital copyright management.

1. Introduction

1.1. Background

In recent years, the digital media development has changed Chengdu's sports management pattern significantly. The impact of the digital revolution on Chengdu's sports management, along with its opportunities and challenges, is discussed. Chengdu's sports and media interaction, influenced by cultural, economic, and technological factors, has unique characteristics.

Traditional media and National Radio have historically influenced the relationship between sports and media in Chengdu. The rise of the Internet and mobile technology in the digital age has transformed this pattern. Digital platforms like microblog, WeChat, and Tencent have expanded sports content coverage and changed its consumption. The increase in sports content consumption on digital platforms reflects the digital transformation in Chengdu's sports media field. Online platforms are increasingly popular among China Chengdu's audiences for sports-related content. The strategic repositioning of sports management is needed, focusing on digital marketing and online fan participation. Advanced technologies like 5G and artificial intelligence have set a new standard in sports broadcasting and fan participation strategies. These technologies aim to meet the complex needs of China Chengdu's audiences. However, challenges such as digital rights management and online content regulation have arisen.

This study aims to explore the dynamic changes in Chengdu's sports management due to digital media emergence. It seeks to understand how sports organizations in

China Chengdu adapt to the digital platform and the challenges they face. The study aims to provide insights into effective strategies and practices for the China Chengdu market in the digital age.

1.2. Research questions and Objectives

The study focuses on the research questions concerning the impact of digital media on sports management in Chengdu, China, analyzing changes in communication, fan participation, and marketing strategies. It also examines the digital media strategies adopted by sports organizations in Chengdu, evaluating their effectiveness on fan loyalty, brand building, and income generation, and comparing them with global trends.

The research aims to understand the role of digital media in sports management in Chengdu, exploring the transformation from traditional to digital platforms and assessing the impact on fan participation, marketing, and communication. It also aims to evaluate the digital media strategy of Chengdu Sports Organization, identify best practices, and assess the integration and impact of advanced technologies like AI, VR, and 5G in sports management. Overall, the study aims to provide a comprehensive understanding of the digital media landscape in sports management in Chengdu, offering insights and strategic suggestions for practitioners and scholars in the field.

1.3. Research motivation and significance

The study's motivation is driven by rapid changes in sports management in Chengdu due to digital media, altering consumption and marketing. Chengdu's market characteristics make it an ideal case study for understanding

digitalization in sports globally. The study aims to explore, understand, and contribute to knowledge in this field. Theoretical significance lies in enhancing understanding of digitalization's impact on sports management in diverse environments and filling gaps in existing literature. Practical significance includes providing insights for sports professionals to optimize digital strategies and improve operational efficiency. Policy significance is highlighted in addressing challenges in digital rights management and online content regulation for sports organizations in Chengdu.

2. Theoretical Framework

2.1. Theoretical knowledge

The theoretical basis of this study is rooted in the theories and concepts related to digital media and sports management.

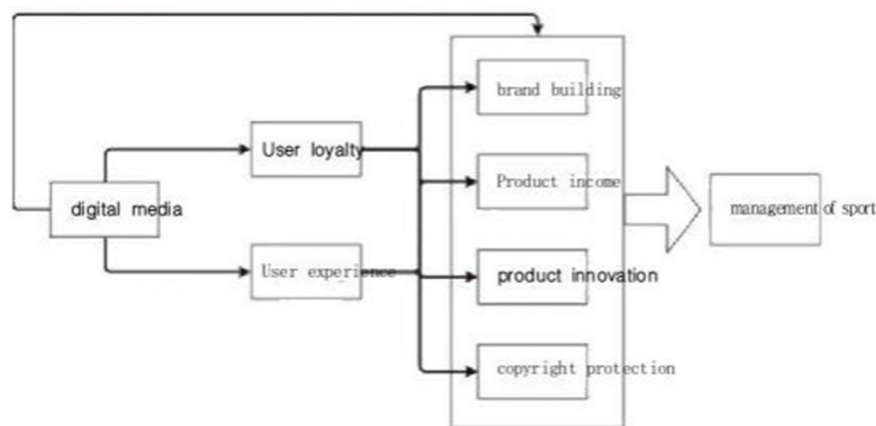


Figure 1. Conceptual Framework Model

2.3. Hypothesis

Hypothesis 1: the integration and high utilization of digital media can significantly improve the participation and satisfaction of fans.

Hypothesis 2: the application of advanced technologies (such as AI, VR, 5g) can improve the viewing experience of sports events, and then improve the operation efficiency and market competitiveness of sports organizations.

Hypothesis 3: in the process of digital transformation, the challenges of copyright management and content supervision faced by sports organizations will have a negative impact on their brand and fan loyalty.

3. Literature Review

3.1. Evolution of China Chengdu's sports media

The progression of sports media in Chengdu reflects rapid changes influenced by broader socio-economic factors and technological advancements. Initially dominated by state-owned radio and print media promoting national sports and athletes, the transition to digital platforms marked a significant shift Zhang Hezhou (2019). The emergence of Internet and mobile technologies led to a "digital revolution" expanding sports content coverage and altering consumption patterns (Liu&Xu, 2020). This digital era witnessed a diversification of content delivery catering to younger, tech-savvy audiences, impacting Chengdu's sports consumption significantly (Chen, 2022). Despite digital advancements,

Use and Gratification Theory (UGT): UGT, developed by Katz, blumler and gurevich (1973), provides a framework for understanding why individuals actively seek specific media to meet various needs. In the context of sports management, UGT can explain the behavior of fans in the digital environment, such as why fans choose some digital platforms to consume sports content (Katz, blumler,&gulevivch, 1973).

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government influence on regulating sports media in Chengdu remains pivotal in balancing commercial interests and national objectives (Li&Zhang, 2019)

3.2. Digital media and sports management practice

The incorporation of digital media into sports management practices in Chengdu marks a significant shift from traditional methods driven by technological advancements and evolving consumer behaviors. Recent academic research has focused on digital media strategies in sports management, emphasizing the use of platforms for marketing and fan engagement. Scholars like Zhang and Wang (2021) have explored how sports organizations in China Chengdu leverage digital platforms for interactive marketing and fan involvement, moving away from conventional advertising. The role of social media platforms like microblogs, WeChat, and Tencent in sports management has been highlighted by researchers such as Zhao and Chen (2019), stressing their importance in enhancing fan participation and real-time interactions. Digital media participation is a crucial element in modern sports management, as evidenced by studies by Wang (2018) and Zhou (2020), showing an increased number of fans engaging in online communities and preferring digital media over traditional channels. The emergence of e-commerce in sports, as studied by Xuheli (2021), has not only revolutionized promotion strategies but also created new revenue streams for sports organizations in China Chengdu, underscoring the necessity for continuous adaptation and innovation in the digital era.

3.3. Integration of advanced technologies in the field of sports

The utilization of advanced technologies such as artificial intelligence (AI), virtual reality (VR), and 5g in sports has revolutionized fan experience and operational efficiency. Research explores the adoption and impact of these innovations in sports, with a specific focus on Chengdu. AI's role in Sports Management has gained recognition, with studies by Zhang and Liu (2020) highlighting its ability to predict player performance and game outcomes, offering valuable insights for team management. Li et al. (2021) discussed AI's application in enhancing personalized fan experiences through tailored content delivery and interactive engagement. Furthermore, virtual reality has transformed how fans engage with sports, providing an immersive stadium experience in Chengdu as emphasized by Wang and Zhao (2019), while Chen and Zhang (2022) explored its use in athlete training through simulated environments. The introduction of 5g technology has significantly enhanced sports broadcasting, achieving high-definition, low-latency streaming and enabling real-time data collection and analysis as discussed by Liu and Wang (2021). These technologies, including AI, VR, and 5g, are pivotal in reshaping sports management and fan engagement, bolstering operational efficiency and transforming fan participation in sports, particularly within Chengdu's rapidly evolving technological landscape. Despite the numerous opportunities presented by these technologies, challenges such as high implementation costs and the need for specialized expertise remain, as highlighted by Xu and Li (2022), who also identified the potential for these innovations to create a more inclusive and immersive sports experience for a broader audience.

3.4. Challenges in Digital Sports Management

Integrating digital media into sports management offers numerous advantages alongside distinct challenges. This literature review focuses on the complexities of digital rights management, online content regulation in Chengdu, and ethical considerations. DRM presents a significant challenge for sports media, especially in safeguarding intellectual property due to the ease of content reproduction (Zhang and Li, 2021). Online content regulation in Chengdu highlights government control for moral standards, though it can impede freedom of expression (Wang et al. 2020). Ethical and legal

issues in digital sports media, such as marketing dilemmas and sponsorship challenges, are gaining prominence (Liu & Chen, 2019). Maintaining fan engagement in the digital era is becoming harder due to digital saturation, necessitating innovative strategies for attracting and retaining attention (Zhao, 2020).

3.5. Comparable Global Perspectives

Comparative analysis of digital sports management practices in Chengdu and globally reveals insights into challenges and strategies. Literature review discusses global perspective on digital sports management and compares practices with Chengdu. Global trend of digital sports management emphasizes shift towards online fan participation and digital marketing strategies (Smith and Lee, 2021). Comparison of digital media strategies between Chengdu and global practice highlights cultural differences in platform usage. Adoption of advanced technology in sports management varies globally, with Chengdu often leading in integration due to strong digital infrastructure (Wang et al. 2022). Regulatory and ethical considerations differ between regions, reflecting broader media governance and cultural attitudes. Understanding these differences is crucial for effective global sports management strategy development (Zhang & Liu, 2019). Factors affecting social media fans' participation and experience include effective planning and utilizing digital strategies to improve quality (Pandita and Vapiwala, 2023).

4. Research Methods

4.1. Research design

This research adopts a mixed method research design, combining qualitative and quantitative methods, in order to comprehensively understand the impact of digital media on China's sports management. This design allows a more detailed exploration of the subject, making the triangulation of data and discovery more effective (Creswell & Creswell, 2017). The quantitative component includes the collection and analysis of digital data. The impact of digital media on sports management is studied by collecting relevant data from Chengdu, China. These data are usually presented in the form of statistical data, charts and graphs; The qualitative aspect focuses on obtaining more in-depth insights through detailed contextual data. As shown in Figure 2.

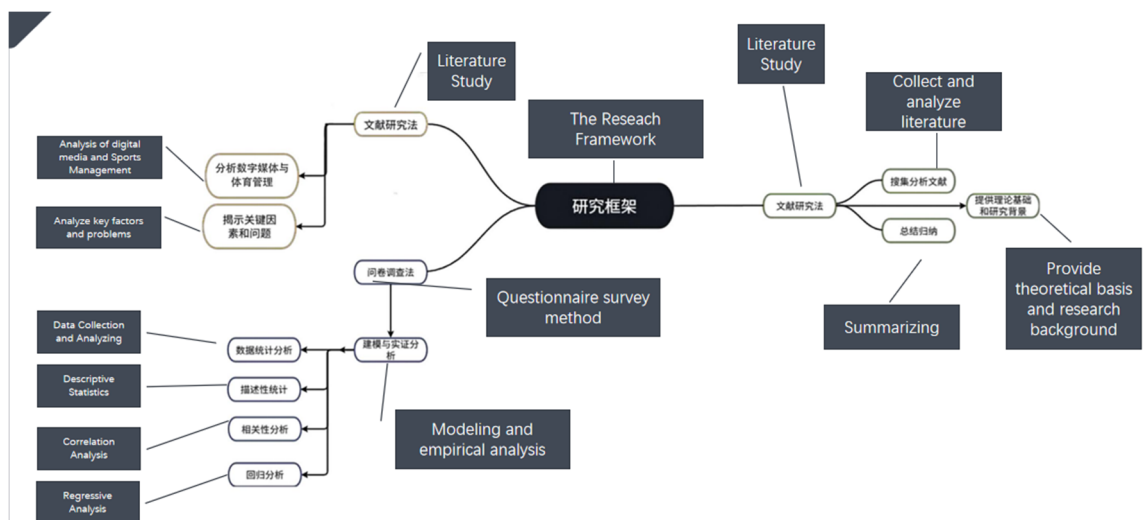


Figure 2. Research Design Framework

4.2. Data collection methods

Quantitative data collection: quantitative data will be collected through online surveys. The survey will include questions on the closed-end and Likert scales to collect data on the use and impact of digital media in sports management. The survey will cover the use of digital media, fan participation strategies and the perceived effectiveness of these strategies.

Qualitative data collection: for qualitative components, semi-structured interviews will be conducted with professionals in Chengdu's sports management industry. These interviews will deeply understand the experience and views of industry practitioners on integrating digital media in sports management. In addition, we will also conduct content analysis on digital media platforms used in sports management, such as microblog and wechat, to understand the nature of fan participation and digital content strategies.

4.3. Sampling

Quantitative sampling: survey participants will choose by stratified random sampling to ensure a representative sample of people interested in sports management, including sports marketers, managers and fans. The target sample size of the survey is set at 400 respondents to ensure statistical significance. According to the formula, there are about 150000 sports practitioners in Chengdu, and the number is about 383. In order to prevent insufficient investigation and recovery, the number is set at 400. As shown in Figure 3, sampling is calculated by this formula.

$$n=N/(1+N*e^{-2})$$

Figure 3. Sampling calculation formula

4.4. Data analysis

Quantitative data from the survey will be analyzed using statistical software, focusing on digital media's impact on sports management through techniques like regression analysis. Qualitative data from interviews and content analysis will be transcribed and analyzed using topic analysis to identify themes related to digital media in sports management. Qualitative analysis will complement quantitative findings. Questionnaire data analysis involves reliability and validity checks using Cronbach alpha coefficient and kmo index. The research will establish digital media and sports management indicators, create a regression equation, and assess the impact on sports management. The regression equation is detailed in the paper.

$$Y= \alpha+\beta X+ \gamma CV+ \varepsilon$$

Where y is the sports management index, X is the digital media variable, and CV is the control variable, including individual characteristic variables, environmental variables, etc.

5. Results and Discussion

This study discusses the impact of digital media on Sports Management in Chengdu, China, with special emphasis on the transformative impact of technological progress and changes in consumer behavior on sports management practice. The study uses quantitative data methods, collects data from different stakeholder groups of Chengdu Sports Industry

through surveys and interviews, and analyzes and checks the use of digital media on microblogging, wechat and other platforms, providing a comprehensive perspective for digital strategies in sports management.

The results show that the field of sports management in Chengdu has shifted from traditional media to digital media. Digital platform has become the core of fans' participation, marketing strategy and brand building, and has a clear preference for personalized and interactive content. The study also emphasized the importance of advanced technologies such as artificial intelligence, virtual reality and 5g in improving fan experience and operational efficiency. However, digital rights management, online content regulation and maintaining fan participation in a challenging digital environment were identified as key issues. The comparative analysis with the global trend shows that the digital sports management method in Chengdu is unique and universal. The research emphasizes the need for sports organizations to constantly adapt to the digital environment, and the need to find a balance between technical opportunities and ethics and regulation.

This study conducted a multi-dimensional analysis of the collected sample data, including reliability analysis, validity analysis, descriptive analysis, correlation analysis, regression analysis, and intermediary validity test analysis. Cronbach's alpha coefficient was used to evaluate the reliability of each dimension of the questionnaire, including digital media, user loyalty, user experience, brand building, product revenue generation, product innovation and copyright protection. The coefficients of all dimensions exceeded 0.7, indicating that the questionnaire has high reliability. At the same time, the correlation analysis shows that the correlation between digital media and brand building, product revenue generation and product innovation is very high, and user loyalty also has an important impact on brand and innovation, emphasizing the close relationship between these factors. This paper also discusses the impact of digital media, user loyalty and user experience on brand building, product revenue generation, product innovation and copyright protection. The goodness of fit analysis of the regression model and the F value and P value of the integrity test show that the model has good explanatory power. The positive impact of variables emphasizes the importance of enhancing user loyalty and experience in strengthening brand building, promoting product revenue generation and innovation, and copyright protection in the digital media environment.

This study found that digital media has a significant positive effect on user loyalty, which indirectly promotes brand building by improving user loyalty and user experience. Specifically, the mediating effects of user loyalty and user experience account for 55.1% and 18.5% of the total effects, indicating that these two mediating variables play an important role in the path of digital media's impact on brand building. Secondly, the study further verified the mediating role of user loyalty and user experience in the impact of digital media on product revenue through bootstrap sampling test. The results show that these two mediating variables jointly explain 47.1% and 23.7% of the total effect, which once again confirms the key role of user loyalty and user experience in promoting product revenue.

For product innovation, the study also uses the mediation effect model to test, and finds that digital media directly promotes product innovation, and indirectly promotes

product innovation by enhancing user loyalty and improving user experience. Among them, the mediating effect of user loyalty and user experience accounted for 52.0% and 20.3% of the total effect, respectively, highlighting the importance of these two variables in promoting product innovation. In discussing the impact of digital media on copyright protection. The results show that digital media directly and positively affect copyright protection, and indirectly promote copyright protection through the improvement of user loyalty and user experience. The mediating effects of user loyalty and user experience in the total effect were 0.269 and 0.145, respectively, highlighting their role in strengthening copyright protection.

The positive effect of digital media on user loyalty and user experience, and how they significantly affect brand building, product revenue generation and innovation through the mediation effect model. For example, the positive impact of digital media on user loyalty ($\beta = 783$, $p < 0.001$), and the positive impact on user experience ($\beta = 545$, $p < 0.001$).

The mediating effect analysis reveals the mechanism of user loyalty and user experience on brand building, product revenue generation and product innovation under the influence of digital media. The robustness of these mediating effects was further verified by bootstrap test. The results of regression analysis show the overall significance of the model (e.g., F value and P value), and the explanatory degree of independent variables to dependent variables (e.g., R^2). These statistical indicators support the validation of research hypotheses.

To sum up, through these statistical evidences and analysis results, it can be confirmed that the hypothesis proposed on page 12 is statistically significant, and the research objectives are empirically supported. These results provide a strong verification basis for the role of digital media in promoting brand building, product revenue generation, product innovation and copyright protection. Through this series of analysis, the research reveals how digital media indirectly affects brand building, product revenue generation, product innovation and copyright protection by enhancing user loyalty and improving user experience. These findings provide valuable insights into the role of digital media in the modern business environment.

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