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The Impact of Fan Economy on the Development of the Commercialized Sports Industry

Dechang Liu

The Education University of Hong Kong, Hong Kong, China
s1156250@s.eduhk.hk

Abstract. Digital technology and streaming services have profoundly changed the pattern of commercial sports, especially in stimulating the fan economy. Based on literature and SWOT model, this study explores the mechanism of fan economy on fan participation and the evolution of sports industry in the digital marketing environment. The results show that the streaming media platform improves user interaction through immersive experience, and realizes revenue diversification through subscriptions, virtual gifts and online sales. However, excessive commercialization and dispersion of copyright resources may weaken the loyalty of fans. To this end, ports organizations should actively introduce immersive technologies such as virtual reality (VR) and augmented reality (AR) to optimize the interactive experience of watching the game, and formulate differentiated digital marketing strategies to strengthen the dynamic balance between the authenticity of athletes' personal brands and public exposure. The above strategies not only help alleviate the decline in loyalty brought about by commercialization, but also provide theoretical support and practical path for building a sustainable and highly sticky fan economy system.

Keywords: Sports Industry, Digital Marketing, Fan Economy, Star's Affection

1. Introduction

The continuous iteration of Internet technology has significantly improved the level of real-time response and two-way interaction in multiple industries. As far as the sports industry is concerned, the rise of streaming media technology has brought about a systematic adjustment of the communication structure, which is mainly reflected in the migration of traditional TV playback methods to real-time live broadcasts on social platforms, and the wide spread of short video content in digital media. The above changes enable the audience to break through the constraints of time and space and conveniently watch live sports events anytime and anywhere.

At present, large-scale sports events frequently attract millions of online viewers. According to statistics, the number of views of live sports often reaches more than 10 million, which fully highlights the scale effect and coverage of digital sports consumption [1]. About 90% of sports fans watch the event through streaming platforms, indicating that such services are highly popular in sports viewing behavior [1]. The digital platform not only expands the reach of global audiences, but also promotes the development of unpopular sports by lowering the participation threshold. Streaming services have significantly enhanced the interaction between fans and sports content.

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Data shows that nearly half of the audience has a strong emotional dependence on the team they support due to their participation in streaming media interaction, highlighting the core role of digital platforms in cultivating fan loyalty [1]. At the same time, it is necessary to be alert to the excessive exposure of athletes' image and the damage that negative fan behavior on social platforms may cause damage to brand reputation and public trust [1, 2].

Therefore, this study aims to analyze the role of fan economy on the commercial sports industry under the framework of digital marketing. Using a combination of literature combing and business model analysis, which focus on the intrinsic relationship between fan retention and the overall development of the sports industry, and then put forward strategic suggestions to promote the sustainable growth of the industry.

2. The sports stars under the fan economy

2.1. Fan economy

Broadly speaking, the fan economy refers to the emotional attachment of sports fans to sports teams and athletes, which is finally transformed into measurable economic value through a variety of commercialization channels. Such conversion channels cover many aspects such as authorized merchandise sales, competition ticket revenue and commercial endorsement of athletes. With the continuous evolution of the social media environment, watching live sports events and sharing instant reactions in digital space with the help of streaming platforms has gradually been integrated into the basic composition of people's daily life [2]. Against this background, the core revenue source of the sports industry has also shifted, and traditional ticket sales have gradually given way to video content dissemination and social media interaction [2]. In the face of the above-mentioned changes in the industry structure, many enterprises began to regard "fan effect" and "star effect" as strategic tools to improve brand awareness. At the same time, the emotional investment and brand loyalty shown by fans can also promote the brand impression to be further implemented into actual purchasing behavior [2, 3].

With its natural real-time transmission mechanism and interactive function, streaming technology has significantly optimized the audience's viewing experience of the event [2, 3]. In the live broadcast, the key highlights and decisive moments of the game are often played back in real time or archived by the system, which effectively makes up for the main shortcoming in the traditional spectator mode - that is, the problem that the details are difficult to identify due to the distance of the shooting position. The above technical characteristics not only promote information exchange and experience sharing among sports enthusiasts, but also play an increasingly important role in the publicity and promotion of sports events and the marketing of special sports programs within the industry [3].

2.2. Star affection

As a strategic marketing phenomenon, the star effect is reflected in the help of famous people to participate in promotional activities or serve as product spokespersons, so as to shape the brand image and gain public recognition and emotional support. With the Air Jordan brand as a typical representative, its successful practice vividly reveals how the identity of athletes is commercialized. In this model, what consumers buy is no longer limited to the product entity, but also includes the symbolic meaning and cultural value attached to the athlete [3]. This case clearly shows that the brand strategy built around athletes can turn fans' admiration into continuous consumer loyalty and

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significantly improve the emotional identity of the brand. At the same time, fans gradually establish a solid psychological attachment relationship through deep emotional connections with athletes and their teams [3].

Nike's brand marketing strategy around Michael Jordan has effectively strengthened the above identity mechanism and prompted fans to bind their personal self-image with the image of athletes. This emotional-driven brand construction method not only improves the participation of fans and promotes consumption behavior, but also actively promotes the continuous expansion and mature evolution of the fan economic system [3, 4].

2.3. The impact of fan economy on the sports industry

The rise of streaming media technology has profoundly changed the operation pattern of the fan economy. In the early stage of development, the fan economy mainly depends on ticket revenue and sales of peripheral goods. However, after entering the digital age, various emerging profit models continue to emerge, such as obtaining exclusive camera perspectives or professional commentary content through online subscriptions, and providing paid interactive services such as one-minute video conversations with athletes [4]. At the same time, the sales channel of sports derivative products has also gradually transformed from offline physical stores to a new model of online and offline integration, among which live sales can often bring higher turnover.

However, the marketing strategy around athletes is not risk-free. Take negative public comments as an example, if an athlete arouses public disgust, it is likely to cause a serious blow to his personal brand image and reduce the trust level of consumers [4]. Once the spokesperson has a credibility crisis, the relevant brands are also vulnerable to the negative effects of the chain. It can be seen that although the use of athlete endorsement can effectively stimulate the growth of the fan economy, without proper management, such cooperative relationships may also drag the brand into the dilemma of reputation damage and financial risk [4].

3. SWOT analysis with fan economy in the sports industry

3.1. Strengths & opportunities

The popularity of streaming media technology has created a new opportunity for the fan economy to empower the experience of watching sports events. Take the real-time bullet screen comment mechanism as an example, the audience can express their support for the contestants with the help of the instant feedback function, which has shown remarkable results in improving the sense of participation in the competition. In the field of e-sports, the tactical analysis and on-site decision-making analysis provided by users with high spectator experience can effectively assist other spectators to more accurately grasp the tactical logic and response strategies of the players. This kind of interactive behavior not only responds to the psychological needs of users to express themselves in the process of watching the game, but also gives the behavior of watching the game emotional value, thus promoting the audience's role from passive recipients of information to active co-co-constructors of sports experience [5].

Streaming media technology has broken through the double limitations of time delay and geographical barriers in the traditional spectator mode at the technical level, and realized the synchronous reception of the same competition content by global audiences. The global viewing model has significant strategic value in promoting unpopular or emerging sports and expanding potential audiences. With the continuous evolution of streaming media technology, the revenue

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structure of sports events has also shown a diversified development trend. Compared with the profit model that relied on on-site ticket sales in the past, the current event organizers can expand the source of revenue by setting up subscription services, opening live reward functions and introducing virtual gift mechanisms and other channels, so as to effectively enhance the stability and sustainability of the financial situation [6].

The continuous evolution of streaming media technology has also promoted the profound transformation of sports content consumption. The streaming platform has built a virtualized community interaction space for fan groups, which helps to realize the value co-creation between fans and sports brands, thereby improving the public's overall value recognition of sports-related products and services [6]. For example, the streaming live broadcast function can present a more immersive real-time picture, and with the instant playback mechanism at critical moments, fans can enjoy a higher-quality viewing experience at a lower information acquisition cost [6]. With the support of this technology, the online fan community can quickly aggregate and operate stably. This kind of community ecology is not only conducive to strengthening the identity and emotional loyalty of fans to their team, but also injects continuous community driving force into the long-term development of the sports industry [6, 7].

3.2. Weaknesses & threats

Judging from the subdivision characteristics of the fan group in the sports industry, there is an obvious difference from the entertainment industry: most sports enthusiasts still tend to maintain a low level of consumption expenditure while pursuing a highly immersive viewing experience. However, at present, the revenue structure of most sports events is still highly dependent on ticket sales, while the development of other potential sources of revenue, such as online live broadcasts, membership subscriptions, derivative product development and advertising sponsorship, is relatively lagging [7]. The singleness of this source of income significantly raises the overall risk of the event operation. Specifically, once ticket sales perform poorly, the overall economic feasibility of the event will be seriously impacted.

At the same time, with the wide dissemination of sports events and their related products on various media platforms, a large number of sponsored advertisements have also appeared intensively [7, 8]. The excessive saturation of this kind of advertising is easy to push the sports industry towards excessive commercialization, which in turn weakens the audience's viewing experience and induces fans' dissatisfaction. In addition, the rise of streaming media platforms has also exacerbated the fragmentation trend of the broadcasting rights market. If the audience wants to continuously track the performance of an athlete in different competitions, they often need to subscribe to multiple platforms at the same time. This situation not only increases the economic burden of the audience, but also puts cognitive pressure on their information processing ability [8, 9].

Although the traffic growth brought by streaming media may intensify the competition between sports events and related products, if the event organizers cannot continue to provide attractive event content or high-quality products, it may still be difficult to maintain the fan base, especially those who are loyal at the middle and low levels. In addition, some consumers still stick to the traditional concept of consumption. They spend most of their income on material consumption, pay less attention to spending in sports and entertainment, and are not willing to invest. It is worth warning that the inappropriate remarks made by some fans who are keen on sports on social media may induce online harassment and even cyber violence, thus having a negative impact on the relevant brand image and public reputation [9].

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At the same time, the younger generation of consumers pay more and more attention to personalized self-expression, and their interests and preferences show a trend of diversification and specialization. In terms of sports watching behavior, this group is more inclined to choose subdivisions that suit their personal interests, such as extreme sports and e-sports. However, the attention to traditional mainstream sports events has decreased relatively [9]. The trend of differentiation and fragmentation of audience demand in the sports consumption market is posing a significant challenge to the development and operation of large-scale comprehensive sports events.

4. Suggestion

4.1. The combination of technological advancements and the fan economy

The previous analysis shows that the audience's demand for live sports events continues to rise, especially in terms of immersion and interactive participation. At the same time, fan loyalty has become a key variable driving the growth of the economic value of the sports industry. Against this background, the continuous maturity of virtual reality (VR) technology provides a broad prospect for improving the practical effect of traditional streaming media marketing strategies [10].

E-sports competitions represented by League of Legends and Fortnite have begun to introduce metaverse-related technologies into the presentation of events. During the global finals of League of Legends, Fist launched virtual venue technology, allowing the audience to enter a digital environment similar to the metaverse and participate in the interaction of the event in a more immersive way [10]. Similarly, "Fortnite" has also built a virtual competition space. The audience is no longer a passive viewer, but can participate in real-time battles and interact with other players in the digital arena [10]. The above innovations have significantly enhanced the audience's sense of presence and participation, making the viewing process more immersive, and thus improving the audience's overall understanding of the value of participation in the competition.

This kind of trend has gone beyond the scope of e-sports. Fans of traditional sports, including football, basketball and volleyball, also show a strong interest in the immersive viewing experience. The study pointed out that the enhanced viewing mode built by technical means such as multi-angle picture presentation, real-time data fusion and interactive functions can significantly improve the enthusiasm of the audience to participate and their willingness to pay [10, 11]. Young audiences especially prefer such functions, because these functions inject more personalized and interactive elements into watching sports events.

Based on the above experience, traditional sports events can draw on these technical practices to optimize the viewing experience by building a virtual environment that simulates the immersive viewing experience. By integrating immersive technology and interactive functions, sports organizations can promote the transformation of the audience experience from passive viewing to active participation [10,11]. In the rapidly evolving field of digital sports, the continuous optimization of streaming media forms driven by technological innovation has become an important strategic path to improve audience satisfaction and expand the scale of viewing.

4.2. Streaming media assists in the commercial promotion of the sports industry

The sports industry should take the initiative to seize the development opportunities brought by streaming media technology, which has fundamentally changed the way and pattern of traditional sports information dissemination [11, 12]. In the early stage, the dissemination of sports events mainly relied on word of mouth and offline watching. However, with the rapid popularity of social

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media and radio and television platforms, sports content has gradually penetrated into all levels of people's daily life.

Against this background, sports organizations can effectively expand their audience coverage by establishing cooperation with social media opinion leaders and online celebrities with a wide fan base. The study points out that Internet celebrity marketing has shown a significant effect on improving audience exposure and enhancing user interaction. The reason is that Internet celebrities can transform their existing fan loyalty into the core driving force for the dissemination of new content fields [12]. In addition, the endorsement economy plays a key role in enhancing the overall commercial value of the sports industry. Athletes and competitors get more exposure opportunities through streaming media platforms, thus attracting brand sponsorship and business cooperation, and thus achieving considerable economic returns [12].

At the same time, athletes can also actively participate in streaming activities to improve their popularity and brand influence. Former NBA player Lin Shuhao is a typical case: he once had conversations with celebrities and Internet celebrities from different industries on a talk show and shared his personal growth experience. This cross-field media exposure not only helps athletes expand their fan base, but also significantly improves the public's awareness of them [12, 13]. It can be seen that streaming media not only reconstructs the existing paradigm of sports communication, but also opens up a new path to broaden the audience, shape the personal brand of athletes, and realize the transformation of commercial value.

4.3. The management of the influence of sports stars is of vital importance

However, excessive exposure through streaming platforms and social networks may also lead to a series of negative consequences. Athletes who have suffered too much public attention may therefore destroy their cooperative relationship with sponsoring brands. A typical example is the controversy between Cristiano Ronaldo and Coca-Cola - his inappropriate behavior in a large-scale event eventually led to a decline in the brand's exposure [13]. Similarly, the scandal involved in Ryan Locht also shows that once the media's attention is out of control, it may not only cover up the core value of the sports event itself, but also damage the personal reputation of athletes and weaken the public's trust in the entire sports field [13]. In addition, excessive attention to the image of social media may also make athletes deviate from the center of their career development and increase the psychological burden, which will adversely affect their competitive status [13].

For the above reasons, the public exposure of sports stars needs to be managed under careful assessment and strategic guidance. Compared with the pursuit of continuous media exposure, a more effective way is to focus on major sports achievements or key events with public influence. This strategy not only helps to amplify the influence, but also can effectively avoid the audience's aesthetic fatigue. Blind or untimely exposure may lead to a decline in fan interest or even cause negative comments, eventually shrinking rather than growing the fan base of athletes [13]. At the same time, athletes also need to be very cautious when choosing endorsement partners. Establishing cooperative relationships with poor-quality or controversial brands may damage their personal credibility and weaken the public's sense of trust. Therefore, seeking an appropriate balance between exposure, real image and professional performance is of great significance for maintaining the long-term value of athletes and continuously stimulating fan interaction [13].

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5. Conclusion

This article takes the streaming media era as the analytical context, and systematically sorts out the evolutionary path and stage characteristics of the fan economy in the sports industry. The study found that streaming media technology has shown multiple positive effects in promoting industrial growth: it not only promotes the cross-platform diffusion of sports content and the expansion of market boundaries, but also accelerates the value formation mechanism with fans as the core. Take the social platform as an example, it expands the audience coverage, absorbs a large number of emerging users into the sports consumption field, and promotes the gradual embedding of sports into the daily life structure. At the same time, by enhancing the interactivity and immersion of watching the game, streaming media has significantly improved the audience's emotional identity and loyalty to the team, and has given rise to digital interactive spaces such as fan communities and real-time chat rooms.

At the same time, the study also reveals the intensification of competition brought about by the rise of streaming media platforms, and some sports events face greater operational pressure. Excessive marketing and improper exposure may have a negative impact on athletes' personal reputation and brand value. In response to the above challenges, sports organizations should actively introduce virtual reality (VR) and metaverse-related technologies to optimize the viewing experience and expand audience boundaries. In addition, cooperating with cross-field online celebrities and public figures will help improve the market penetration of sports content. In the process of implementing the marketing strategy with fans as the core, it is necessary to maintain a moderate balance, not only to prevent excessive commercialization, but also to avoid the risk of inducing negative emotions from the audience.

Although the application of cutting-edge technologies such as artificial intelligence (AI) and VR in the sports industry is still in the early stage, the future technological evolution may focus on the deep integration of AI and VR, and committed to creating a "zero-distance" virtual viewing experience. This kind of integration is expected to fundamentally reshape the traditional sports consumption model, thus driving the sustainable growth of the fan economy. Therefore, the follow-up research should focus on the actual effectiveness and mechanism of AI-driven immersion technology in improving fan participation, so as to deepen the theoretical understanding of this emerging issue and provide practical guidance for the long-term sustainable development of the sports industry.

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