Proceedings of ICADSS 2025 Symposium: Consciousness and Cognition in Language Acquisition and Literary Interpretation
DOI: 10.54254/2753-7064/2025.BJ27189

Strategic Sports Communication: Market and Interaction in Olympic Games and FIFA World Cup

Xinyue Li

Stirling College, Chengdu University, Chengdu, China
xil00261@students.stir.ac.uk

Abstract. This literature review considers the applications of Virtual Reality (VR) and Augmented Reality (AR) technology for use in the communications strategy within sports, with a focus on major international sports events such as the Tokyo 2020 Olympics, the Paris 2024 Olympics, the Russian FIFA World Cups, and the Qatari FIFA World Cups. The paper highlights the spectacular shift in fan engagement and modes of communication in the sports industry, which has increased. Immersive technologies have revolutionized the traditional sports experience, optimizing viewer engagement and participation through creative applications. The findings indicate that while VR and AR hold much promise for enhancing audience engagement, there are large gaps in current research, as seen by the methods and practical applications of the said technologies. It is recommended that upcoming research try to bridge these gaps by emphasizing user experience and the overall impact of immersive technologies on sports communication.

Keywords: VR, AR, Olympic Games, FIFA

1. Introduction

Sports management communication strategies have become unprecedentedly important, particularly in mega international events such as the Olympic Games and the FIFA World Cup. The sports sector has grown from USD 213 billion at the end of the 1990s to around USD 600 billion in 2019, which has increased nearly threefold during the 30 years [1]. This growth emphasizes the increasing importance of navigating this vast market. Effective communication plays a crucial role in this rapid market expansion, and both quantitative and qualitative transformations in how sports organizations communicate with stakeholders, fans, and media are worth close examination. The emergence of digital media and social media revolutionized sports marketing; innovative communication strategies are needed for sports organizations to guarantee a competitive advantage and optimize fans' interaction experience.

The advent of immersive technologies like VR and AR has further transformed the communication of sport. Iyer, Pavlik, and Jin [2] describe how experiential media technologies, in particular VR, can redefine public relations stories of sports brands and mega-events in immersive formats that connect remote spectators to live events. This shift to immersive content is particularly relevant in light of the disruptions caused by the COVID-19 pandemic, which has restricted physical turnout at sporting events and increased demand for interactive online experiences. During this time,

DOI: 10.54254/2753-7064/2025.BJ27189

digital marketing and advertising became pivotal for event promotion and fan interaction via social media platforms [1].

The use of AR in sports management is also important. Goebert [3] mentions the projected expansion of the market of AR, intended to be USD 60.55 billion by 2023. According to the latest data by ABI Research [4], the global AR market size is estimated at USD 62.75 billion in 2023. This is slightly higher than expected compared to the USD 60.55 billion predicted by Goebert [3]. In addition, the market size is expected to reach USD 93.67 billion in 2024, showing a strong growth trend. However, there are differences in the predictions of different research institutions. For example, Precedence Research [5] forecasts a market size of USD 108 billion in 2024. These differences may stem from differences in research methods, market definitions, and data sources. In general, the AR market shows a rapid growth trend, and the actual data is basically consistent with the early prediction or even exceeds it. All these point out certain prospects for the use of AR in various marketing scenarios in sports. Firstly, in attempts by companies to further engage with fans who are unable to go to the events, AR brings new solutions to optimize fan experiences, from interactive promotion to quality customer service. Secondly, the analysis of current AR practices among various sport training and management also shows ongoing efforts to use technology for better performance and engagement among the sporting teams and athletes. Bozyer [6] discusses the possibility of AR to enhance physical training and management of competition, referring to the rising consciousness of its value in planning equitable and interesting sporting experiences. He indicates that rapid advances in information technologies have placed AR in the spotlight of sport management.

The application of VR and AR technologies in sports management and communication mirrors a broader trend of digital transformation reshaping interactions across the sports ecosystem. The relevance of these technologies, notably during significant sporting events such as the Tokyo 2020 Olympics and the Russia and Qatar FIFA World Cups, highlights the need for continued research and innovation in communication practice to address the evolving needs of the sports sector. Digital technology has a far-reaching impact on sport communication strategies. In Ling and Zhao's [7] opinion, these changes will significantly affect traditional sports media, marketing, and fan participation. Their research explores the theoretical basis and actual application of sports communication in the digital age based on the analysis of globally renowned sports events and emerging digital platforms. This evidence calls for ongoing research and adaptation in communication strategies to meet the evolving demands of the sports industry.

2. Literature review

2.1. Major findings on VR and AR impact

The incorporation of VR and AR technologies in sports has also revolutionized the way sporting events are consumed by fans. VR makes audiences virtually present, which increases immersion, personalization, and interactivity, thereby improving fan satisfaction and emotional involvement [8]. Elsholz et al. [9] conducted a systematic review of VR utilization in sport and discovered advantages such as increased enjoyment, improved quality of skill, and heightened motivation. Their findings warrant the application of VR in rehabilitation, skill acquisition, and gamified sport utilization, which aligns with learning and motivational theory. AR has also changed viewer experiences, particularly for sports broadcasts. Goebert et al. [10] found that coach-mode AR graphics significantly improved viewer engagement and satisfaction compared to traditional broadcasts. Visual appeal was also shown to have a significant influence on fan receptiveness to AR-based

DOI: 10.54254/2753-7064/2025.BJ27189

marketing [11]. These results illustrate the capacity for AR to enhance storytelling and interactivity in live and digital sport settings.

2.2. Gaps and limitations in the literature

While current literature on the use of VR and AR in sports management, most recently with reference to mega-events like the Olympic Games and FIFA World Cup, offers interesting data, it also demonstrates several methodological and conceptual limitations. Among them is the limited contextual and methodological scope of the majority of studies. Much of the research concentrates on particular technologies or single use cases, thereby precluding a comprehensive perspective spanning several platforms and audience types [8]. From a methodological perspective, there is a trend towards the adoption of qualitative methodologies that, although providing in-depth insights, are limited in their wider applicability. For example, Iyer et al. [2] used qualitative content analysis of FIFA World Cup coverage on YouTube VR, offering depth but narrowness of wider applications. Similarly, Elsholz et al. [9], despite an extensive systematic review of academic and commercial uses of VR, identified inconsistency in methods in the studies included such that synthesis and comparison were difficult.

Sample size limitations also weaken empirical strength. The dependence on secondary data by way of desktop research in Pickman [8] is indicative of a general trend characterized by the absence of an empirical foundation, which is extremely difficult given the rapid evolution of immersive media technology. There is also a clear disconnect between academic research—typically aimed at performance training or rehabilitation for specific user groups—and commercial application with a focus on gamification and mass-market appeal [9]. This gap limits the creation of flexible, inclusive solutions that work for varied populations.

Ultimately, there are several studies that show biases in the explanation of immersive technologies. For example, Goebert et al. [10] emphasized the good reception of augmented reality-enhanced broadcasts by audiences; however, the emphasis on one particular range of applications could obscure additional innovative approaches with the potential to enhance user engagement. Added to this is the lack of longitudinal studies evaluating AR's long-term effect on fan loyalty, brand attachment, or behavioral change. In total, overcoming these limitations—by broadening methodological variety, enhancing sample sizes, and including long-term analyses—will be the key to developing the field of immersive sports communication.

2.3. Conceptual frameworks

A number of theoretical perspectives back the use of VR and AR in sport communication. Digital Communication Theory provides a lens through which to examine how immersive technologies change fan activity from passive viewing to interactive engagement [7]. The Uses and Gratifications Theory is used extensively to study user motives. As Ren et al. [12] implied, fans are attracted to virtual reality (VR) and augmented reality (AR) platforms in a bid to satisfy certain needs—entertainment, access to information, and social interaction—illustrating their superiority to traditional broadcasting media. The concept of the digital divide, as researched in PwC [13], is a major obstacle. As much as immersive technologies enhance access for some, they may inadvertently exclude others due to hardware-related costs or a lack of digital literacy, particularly for rural or economically disadvantaged groups in China. Breaking this obstacle is essential for creating inclusive sporting experiences.

DOI: 10.54254/2753-7064/2025.BJ27189

3. Current applications of VR and AR in sports

3.1. Widespread trends in sports communication

The sports industry has experienced significant development. This growth has seen the establishment of specialized journals and textbooks, reflecting an increased academic interest in the field. A shift towards online platforms for advertising and fan engagement, accelerated by the COVID-19 pandemic, has revolutionized the industry environment. As there were limitations on live events, organizations turned to digital means, highlighting the necessity of social media in attaining audience reach [1]. Digital technologies have enabled broader sharing of sports content and international audience engagement [7]. There has also been heightened interest in virtual and AR technologies, particularly when combined with localization strategies [14].

In the modern-day discourse, virtual reality (VR) and augmented reality (AR) technologies have drawn significant attention owing to their transformative impacts on the sports world. VR has been used in training programs to simulate competitive environments, thus enabling skill acquisition and psychological preparedness among sportspersons [7]. In contrast, AR has been used in live games, enhancing spectators' experiences through the delivery of real-time data and statistics about players. AR created immersive viewing experiences at the Tokyo 2020 Olympics, driving viewership and attracting a younger audience [12]. There have also been startups with a focus on VR and AR offerings to enhance fan experience and broadcasting [13].

Recent studies accentuate VR's impact on top-tier sporting events such as FIFA World Cups and the Olympics. For example, Iyer et al. [2] conducted a qualitative content analysis of pre-game YouTube VR content for the 2018 and 2022 World Cups. They concluded that VR created immersive experiences that placed viewers nearer to the action, accentuating stadium design and local culture. This method significantly improves fan interaction and adds value to the field of sports journalism [2]. Virtual reality (VR) utilization during the pandemic showed how it could ensure continued fan involvement amidst event limitations [8]. The integration of VR with localized technology also presents novel training areas for team sports [14].

The application of AR in sports promotion has also gained momentum. Goebert [3] approximated AR's market value to reach USD 60.55 billion by 2023. The pandemic accelerated the trend, with sports bodies interacting with fans through AR even when they could not attend events. Goebert et al. [10] proved that AR graphics during broadcasts significantly enhanced viewer engagement, with visual appeal being the determining factor for fan interaction [11].

3.2. Integration of VR and AR in major sporting events

In the last several years, major global sporting events have been adopting immersive technologies such as VR and AR to more deeply engage their fans, foreshadowing a digital-first model of sports consumption. The Tokyo 2020 Olympic Games, held under the constraints of the COVID-19 pandemic, underscored the necessity of distant but immersive viewing experiences. Euronews [15] states that VR and AR technology allowed closeness to the action for audiences even if they were not physically present. In particular, NBC utilized 360-degree VR live streaming, while television broadcasts with AR featured real-time data overlays, including world record indicators for track events. Corporate sponsors too have adopted immersive media; for example, Coca-Cola and Samsung debuted interactive marketing campaigns, including AR-enabled packaging and branded virtual reality experiences [15].

DOI: 10.54254/2753-7064/2025.BJ27189

Following these developments, the Paris 2024 Olympics has taken the incorporation of immersive technologies even further into the experience of spectators. The International Olympic Committee [16] launched the "Mind Zone," a virtual reality initiative focused on mental well-being that athletes have praised for its safety. Moreover, the event is also set to include multi-angle virtual reality broadcasts, an Olympic virtual reality platform for venue tours, and augmented reality navigation support on location with real-time statistics [17]. Coca-Cola has even run AR-driven campaigns with Snapchat, indicating the institutionalization of immersive technologies within Olympic marketing campaigns.

The FIFA World Cup has been followed by a parallel strategy. At the 2018 competition held in Russia, the BBC introduced a dedicated virtual reality app that enabled viewers to watch live games in fully immersive stadium atmosphere [18]. Simultaneously, Fox Sports and FIFA introduced VR live streaming with special perspectives—such as referee and behind-the-goal perspectives—while AR-enhanced broadcasts presented live player statistics [19]. Brand sponsors helped to enrich the immersive ecosystem: Coca-Cola's AR activation allowed fans to interact with animated World Cup content through interactive billboards [20], and Sector 5 Digital provided an AR photo experience that allowed users to virtually pose with digital versions of football celebrities [21].

This trend was sustained throughout the Qatar 2022 World Cup, where immersive media took center stage in both domestic and global fan experiences. Chinese digital platforms like Douyin and Migu launched metaverse-like watch parties and 3D interactive replays, which revolutionized the virtual viewing experience for domestic fans [22]. At the same time, Qatari tech startups used AI-driven AR overlays and VR stadium tours to enhance real-time fan engagement [23]. Additionally, international brands employed mobile augmented reality experiences: Snapchat introduced jersey filters, and Visa created an interactive AR penalty-kick simulation.

From Tokyo to Paris and from Russia to Qatar, each new event has built on earlier innovations, generating cumulative momentum in the evolution of immersive fan technologies. These deployments demonstrate how VR, AR, and AI are no longer ancillary to sports media but are now central to modern sports spectacles. As these technologies further develop, immersive, digital-first experiences will probably continue at the center of how international audiences consume live sports events.

4. Research limitations

While this study provides a comprehensive review of the current application of VR and AR in sports communication, there are several limitations that need to be taken into account. First, the discussion relies primarily on secondary sources such as industry reports and academic articles, without the inclusion of primary data from practitioner interviews or user experience. This limits the level of insight into the actual impact of immersive technologies. Second, the review of VR and AR applications is not founded upon a systematic framework or quantitative metrics to assess user engagement, technical effectiveness, or return on investment. Further, the study does not account for cross-cultural variances in the adoption and acceptance of immersive technologies, which can influence their global viability. In light of the rapid evolution of technology, some of the case studies, particularly those that concern past events like the 2018 FIFA World Cup, may not reflect the current state of innovation. In addition, while rich in descriptive information, the research would benefit from greater academic stringency through closer adherence to theoretical models and thus more in-depth analysis. Lastly, the study concentrates on short-term fan engagement results, with minimal investigation into the long-term effects of immersive media on the sports industry's structure and consumption.

DOI: 10.54254/2753-7064/2025.BJ27189

5. Prospects

5.1. Widespread trends in sports communication

The future of VR and AR technology in sports is evolving rapidly, with tremendous potential to enhance sports communication and fan engagement. Elsholz et al. [9] enumerate benefits such as enhanced enjoyment, improved skill level, and enhanced motivation due to VR sports technology. The future may revolve around immersive experiences that engage as well as educate the fan on the sport, incorporating AI to provide personalized content and enhance emotional connections [8]. There is a move towards the commercialization of VR and AR, incorporating gamification and social features to get more individuals involved in the experience. Customized experience and intuitive interfaces, along with improved hardware quality, will lead to adoption and satisfaction [13]. The innovations hold out the possibility of new revenue streams while improving the viewing experience as a whole.

5.2. Recommendations for future research

To further augment the adoption of immersive technologies in sports management, future research needs to prioritize empirical studies assessing the impact of VR and AR on fan engagement [8]. The application of theories, including the Uses and Gratifications Theory, Technology Acceptance Model (TAM), and Flow Theory, can give a more nuanced insight into user motivation and behavior. Further, developing educational initiatives to enhance user awareness of VR and AR is needed for widespread adoption [13].

6. Conclusion

The incorporation of VR and AR within sports communication strategies is a game-changing evolution, as witnessed in the Tokyo 2020 Olympics, Paris 2024 Olympics, and FIFA World Cups. These technologies have revolutionized the way people consume sports by allowing immersive experiences and live interactions. The COVID-19 pandemic accelerated this process, and AR has been a key tool for remote fan engagement and marketing interaction. As AR-supporting devices become more widespread, the potential of the business opportunity of such technologies is bound to grow exponentially.

Theoretical research and practical applications have shown different priorities—VR is more oriented towards sport-specific experience, while AR is more oriented towards gamified and social interaction. This is an indication of the need for future research that connects theory and practice and is centered on how immersive technologies revolutionize sports storytelling and fan interaction. Generally, VR and AR are changing the interactions among fans, athletes, and sports organizations. As these technologies evolve, they are likely to play a fundamental role in shaping the future of sports communication in an ever-digitized and immersive landscape.

References

[1] Byon, K.K. and Phua, J. (2021) Digital and interactive marketing communications in sports. Journal of Interactive Advertising, 21, 75-78. https: //doi.org/10.1080/15252019.2021.1970422

[2] Iyer, S.R., Pavlik, J. and Jin, S.V. (2022) Leveraging virtual reality (VR) for sports public relations and sports journalism: Qualitative analyses of VR content productions for 'Russia 2018' and 'Qatar 2022' FIFA World Cups. Journal of Sport & Tourism, 26, 335-362. https: //doi.org/10.1080/14775085.2022.2097942

DOI: 10.54254/2753-7064/2025.BJ27189

[3] Goebert, C. (2020) Augmented reality in sport marketing: Uses and directions. SIJ Sports Innovation Journal, 1, 134-151. https: //doi.org/10.18060/24227
[4] ABI Research. (2024). Worldwide augmented reality (AR) market valuation. Retrieved from https: //www.abiresearch.com/news-resources/chart-data/report-augmented-reality-market
[5] Precedence Research. (2024). Augmented reality market size to hit USD 2, 804.82 bn by 2034. Retrieved from https: //www.precedenceresearch.com/augmented-reality-market
[6] Bozyer, Z. (2015) Augmented reality in sports: Today and tomorrow. International Journal of Science Culture and Sport (IntJSCS). https: //doi.org/10.14486/IJSCS392
[7] Ling, S. and Zhao, K. (2024) Research on sports communication theory and practice in the digital era. Frontiers in Sport Research, 6, 164-168. https: //doi.org/10.25236/FSR.2024.060426
[8] Pickman, D.K. (2023) The use of virtual reality and augmented reality in enhancing the sports viewing experience. International Journal of Arts, Recreation and Sports, 1, 39-49.
[9] Elsholz, S., Pham, K. and Zarnekow, R. (2025) A taxonomy of virtual reality sports applications. Virtual Reality. https: //doi.org/10.1007/s10055-024-01090-0
[10] Goebert, C., Greenhalgh, G. and Dwyer, B. (2022) A whole new ball game: Fan perceptions of augmented reality enhanced sport broadcasts. Computers in Human Behavior, 137, 107388. https: //doi.org/10.1016/j.chb.2022.107388
[11] Goebert, C. and Greenhalgh, G.P. (2020) A new reality: Fan perceptions of augmented reality readiness in sport marketing. Computers in Human Behavior, 106, 106231. https: //doi.org/10.1016/j.chb.2019.106231
[12] Ren, H., DaCosta, L., Miragaya, A., et al. (2008) Olympic Studies Reader: A Multidisciplinary and Multicultural Research Guide. Beijing Sport University & Universidade Gama Filho.
[13] PwC. (2020). Tǐyù hángyè fùsū jìnxíng shí: biàngé niándài [The recovery of the sports industry: An era of transformation]. PwC.
[14] Gradl, S., Eskofier, B.M., Eskofier, D., et al. (2016) Virtual and augmented reality in sports: An overview and acceptance study. Friedrich-Alexander University Erlangen-Nürnberg (FAU), realities.io, Fraunhofer Institute for Integrated Circuits IIS. https: //doi.org/10.1145/2968219.2968572
[15] Euronews. (2021). Tokyo 2020: Virtual reality and augmented reality bringing spectators closer to the action. Retrieved from https: //www.euronews.com/next/2021/07/23/tokyo-2020-virtual-reality-and-augmented-reality-bringing-spectators-closer-to-the-action
[16] International Olympic Committee. (2023). World Mental Health Day: First-of-its-kind Mind Zone praised by athletes at Paris 2024. Retrieved from https: //www.olympics.com/en/news/world-mental-health-day-first-of-its-kind-mind-zone-praised-by-athletes-at-paris-2024
[17] International Olympic Committee. (2024). Olympic digital experiences set to serve and delight fans for Paris 2024. Retrieved from https: //www.olympics.com/en/news/olympic-digital-experiences-set-to-serve-and-delight-fans-for-paris-2024
[18] TVBEurope. (2018). World Cup 2018: A look inside the BBC's dedicated VR app. Retrieved from https: //www.tvbeurope.com/features/world-cup-2018-a-look-inside-the-bbcs-dedicated-vr-app
[19] PreScouter. (2018). Technologies used in the FIFA World Cup 2018. Retrieved from https: //www.prescouter.com/2018/06/technologies-fifa-world-cup-2018/
[20] Grand Visual. (2018). Coca-Cola FIFA World Cup AR Experience. Retrieved from https: //grandvisual.com/work/coca-cola-fifa-world-cup-ar-experience/
[21] Sector 5 Digital. (2018). FIFA Player AR Experience. Retrieved from https: //www.sector5digital.com/use-cases-and-projects/fifa-player-ar-experience
[22] Global Times. (2022). China's metaverse-powered World Cup coverage reshapes watching experience with immersive tech. Retrieved from https: //www.globaltimes.cn/page/202211/1279989.shtml
[23] Gulf Times. (2022). Tech startup to use AI, AR for immersive 2022 FIFA World Cup fan experience. Retrieved from https: //www.gulf-times.com/story/662543/Tech-startup-to-use-AI-AR-for-immersive-2022-FIFA-World-Cup-fan-experience