

TECHNOLOGICAL MEDIATION IN 21ST-CENTURY SPORT: EXAMINING ATHLETIC PERFORMANCE, FAN ENGAGEMENT AND SOCIOCULTURAL IMPLICATIONS

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ABSTRACT

The twenty-first century has witnessed rapid technological transformation in sport, reshaping athletic performance, fan engagement, and sociocultural experiences. This paper examines technological mediation in contemporary sport, focusing on how digital technologies such as wearable devices, artificial intelligence, biometric systems, social media platforms, and digital broadcasting infrastructures influence sporting practices. Using a critical literature review approach, the study draws on Mediatization Theory, Technological Determinism, Actor-Network Theory, and Afrocentric Theory to analyse the socio-technical dynamics of modern sport. Findings indicate that technological mediation enhances athletic performance through data-driven training, injury prevention, and performance optimisation. It also expands global access to sport and strengthens fan interaction through digital platforms. However, these benefits are accompanied by significant ethical and sociocultural concerns, including athlete surveillance, data commodification, digital inequality, and cultural marginalisation. The analysis further reveals that African sporting contexts experience unequal access to digital technologies, reinforcing structural disparities while simultaneously creating limited opportunities for the digital preservation of indigenous sporting practices. The paper concludes that technological mediation in sport is inherently dual in nature, being both enabling and constraining. It improves efficiency, connectivity, and global visibility, while also raising critical questions about equity, privacy, and cultural sustainability. By integrating global and Afrocentric perspectives, this study contributes to ongoing debates on sport and technology and underscores the need for context-sensitive approaches to digital transformation in sport.

Keywords: Technological mediation, sport, digitalisation, fan engagement, Afrocentric theory, athlete surveillance

Introduction

The twenty-first century has witnessed an unprecedented integration of digital technologies into virtually every aspect of human life, including sport. According to Qi et al. (2024), advances in artificial intelligence (AI), wearable technologies, biometric monitoring systems, virtual and augmented reality, social media platforms, and digital broadcasting infrastructures have transformed how sport is organised, performed, consumed, and interpreted. As a result, contemporary sport increasingly operates within technologically mediated environments where interactions among athletes, coaches, administrators, media organisations, and spectators are shaped by complex digital systems. These developments have fundamentally altered traditional sporting practices, creating new opportunities for performance enhancement, communication, commercialisation, and audience engagement.

The growing influence of technology in sport reflects broader processes of digitalisation and mediatization that characterise contemporary societies. Contani and Matitz (2025) argued that social institutions increasingly adapt to media logics in which visibility, connectivity, audience engagement, and data-driven decision-making become central organisational priorities. Within sport, these transformations are evident in the widespread adoption of performance analytics, technologically assisted officiating systems, interactive livestreaming platforms, and algorithm-driven fan engagement strategies (Abeza et al., 2024). Consequently, sport has evolved beyond its traditional identity as a physical and recreational activity to become a highly interconnected socio-technical phenomenon.

Technological mediation refers to the process through which technological systems influence, shape, and transform human experiences, social interactions, and cultural practices. Within sport, technological mediation extends beyond the use of equipment and digital devices to encompass the ways technologies structure athletic performance, officiating processes, media representation, and spectatorship experiences. Qi et al. (2024) observed that technologies such as Global Positioning System (GPS) trackers, wearable sensors, Video Assistant Referee (VAR) systems, social media algorithms, and virtual reality applications actively participate in the production of sporting experiences and meanings. Consequently, technology should not be viewed merely as a supportive tool but as an influential actor that shapes contemporary sporting culture.

The increasing dependence on digital technologies has generated substantial benefits for sport. Qi et al. (2024) reported that performance monitoring systems enable coaches and athletes to make evidence-based decisions regarding training, recovery, and injury prevention. Similarly, Zhou et al. (2025) noted that digital broadcasting technologies have expanded access to sporting events, allowing fans to engage with competitions across geographical boundaries. Tang et al. (2024) further observed that social media and livestreaming platforms have transformed spectators from passive consumers into active participants who create, share, and interpret sporting content in real time. Collectively, these innovations have contributed to the globalisation of sport and the emergence of new forms of fan participation and commercial engagement.

Despite these advantages, technological mediation has also generated significant ethical, social, and cultural concerns. Qi et al. (2024) highlighted issues relating to athlete surveillance, privacy violations, algorithmic control, and data ownership. The growing influence of digital platforms has intensified commercial pressures on athletes and sporting organisations while simultaneously raising concerns about unequal access to technological resources. These challenges are particularly significant in developing regions where disparities in digital

infrastructure and economic resources may limit participation in technologically enhanced sporting environments.

Within African contexts, debates surrounding technological mediation extend beyond questions of efficiency and innovation to include issues of cultural identity, indigenous knowledge systems, and digital inequality. Sakala (2024) argued that technological transformation should not merely replicate dominant Western models of sport development but should be informed by culturally responsive and context-specific approaches. Similarly, Sakala and Roux (2024) maintained that indigenous games continue to play important roles in community life, physical development, and cultural preservation across many African societies. Madima (2024) further contended that while digital technologies create opportunities for documenting and promoting indigenous sporting traditions, they may also contribute to cultural commodification and the marginalisation of local knowledge systems when implemented without adequate sensitivity to indigenous realities.

Although existing literature has extensively examined the relationship between technology, performance enhancement, and sports communication, relatively few studies have critically integrated Afrocentric perspectives into discussions of technological mediation in sport. Much of the current scholarship remains grounded in Eurocentric assumptions that inadequately address the unique sociocultural realities of African sporting contexts (Sakala, 2024). Consequently, important issues relating to digital inequality, indigenous sporting practices, and culturally relevant approaches to technological innovation remain underexplored.

This paper argues that technological mediation has fundamentally transformed athletic performance and fan engagement in contemporary sport; however, its benefits and consequences are unevenly distributed across different social and cultural contexts. While technological innovations have enhanced performance optimisation, accessibility, and global connectivity, they have also intensified concerns relating to surveillance, commodification, digital exclusion, and cultural marginalisation (Cisse, 2024; Qi et al., 2024). By integrating Mediatization Theory, Technological Determinism, Actor-Network Theory, and Afrocentric perspectives, this paper provides a critical examination of the opportunities and challenges associated with technological mediation in twenty-first-century sport.

Theoretical Framework

This paper is anchored on Mediatization Theory, Technological Determinism, Actor-Network Theory (ANT), and Afrocentric Theory. These theoretical perspectives provide complementary lenses for understanding how technological systems shape sporting practices, athlete experiences, fan engagement, and sociocultural realities in contemporary sport.

Mediatization Theory

Mediatization Theory explains how media technologies increasingly influence the operations, structures, and cultural practices of social institutions (Hjarvard, 2008, 2013). Rather than serving merely as channels of communication, media technologies become embedded within institutional processes and shape how social activities are organised and experienced. In contemporary sport, mediatization is evident in the ways sporting organisations adapt to broadcasting demands, digital engagement metrics, and audience expectations.

Contani and Matitz (2025) argued that contemporary sports spectatorship is increasingly shaped by digital infrastructures that influence how fans interact with sporting events across time and space. Similarly, Abeza et al. (2024) observed that social media platforms have transformed communication between athletes, clubs, and supporters by creating continuous channels of interaction and content production. The influence of media logic is also evident in the scheduling

of sporting events to suit television audiences, the growing emphasis on athlete branding, and the increasing importance of digital visibility in sponsorship negotiations.

From the perspective of this study, Mediatization Theory is useful for explaining how technological mediation has transformed sports spectatorship from passive observation into interactive participation. It also provides a framework for understanding how media technologies shape the commercialisation of sport and the construction of athlete identities in digitally connected environments.

Technological Determinism

Technological Determinism posits that technological innovations act as major drivers of social and cultural change. Proponents of the theory argue that technological developments influence patterns of behaviour, institutional structures, and social relationships. Applied to sport, the theory suggests that innovations such as wearable technologies, artificial intelligence, virtual reality systems, and technologically assisted officiating have fundamentally altered how sport is practised and experienced.

Qi et al. (2024) noted that digital technologies have enhanced athlete performance monitoring, injury prevention, and decision-making processes. Similarly, technologies such as Video Assistant Referee (VAR) systems and Hawk-Eye technologies have reshaped officiating by reducing human error and improving decision accuracy. The emergence of esports further illustrates how technological innovations can create entirely new sporting ecosystems and forms of spectatorship (Tang et al., 2024).

However, critics of Technological Determinism argue that technology alone does not determine social outcomes because cultural, political, and economic factors also influence how technologies are adopted and utilised. This criticism is particularly relevant within African sporting contexts, where access to technological resources is often constrained by infrastructural and economic limitations (Cisse, 2024). Therefore, while technological innovations create opportunities for transformation, their impacts remain shaped by contextual realities.

Actor-Network Theory

Actor-Network Theory, developed by Latour (2005), conceptualises society as a network of relationships involving both human and non-human actors. Within this framework, technologies are not passive tools but active participants that influence decision-making, behaviour, and social interactions. Sporting experiences therefore emerge through interactions among athletes, coaches, governing bodies, fans, media organisations, algorithms, wearable devices, and digital platforms.

The relevance of ANT to sport is evident in contemporary performance management systems where wearable sensors collect data, artificial intelligence analyses performance patterns, coaches interpret results, and athletes adjust their behaviours accordingly. In such situations, technological devices actively shape sporting outcomes rather than merely recording them. Likewise, social media algorithms influence the visibility of sports content, determine audience engagement patterns, and contribute to the construction of athlete reputations (Abeza et al., 2024).

Actor-Network Theory is particularly useful for understanding technological mediation because it recognises the interconnected relationships through which sporting experiences are produced. The theory highlights how technological systems participate in shaping power relations, communication processes, and cultural meanings within sport.

Afrocentric Theory

While Mediatization Theory, Technological Determinism, and Actor-Network Theory provide valuable insights into the role of technology in sport, they originate primarily from Western intellectual traditions. Consequently, they may not adequately address the cultural realities, indigenous knowledge systems, and historical experiences of African societies. Afrocentric Theory provides an alternative framework that centres African perspectives, values, and experiences in the analysis of social phenomena (Asante, 2007).

According to Sakala (2024), Afrocentric approaches emphasise the importance of contextualising sport and physical activity within African cultural realities rather than relying exclusively on Eurocentric assumptions. Similarly, Sakala and Roux (2024) highlighted the significant role of indigenous games in promoting physical development, cultural identity, and community cohesion among African populations. Afrocentric Theory therefore encourages scholars to examine how technological innovations affect indigenous sporting traditions, cultural preservation, and equitable access to sporting opportunities.

From an Afrocentric perspective, technological advancement should not be evaluated solely in terms of efficiency, productivity, or commercial success. Rather, technological development should also be assessed according to its capacity to promote social inclusion, cultural continuity, community empowerment, and equitable participation. This perspective is particularly relevant in addressing concerns regarding digital inequality, cultural commodification, and the marginalisation of indigenous sporting practices within technologically mediated sporting environments.

Theoretical Synthesis

The integration of Mediatization Theory, Technological Determinism, Actor-Network Theory, and Afrocentric Theory provides a comprehensive framework for analysing technological mediation in contemporary sport. Mediatization Theory explains how media technologies reshape sporting institutions and spectatorship. Technological Determinism highlights the transformative influence of technological innovations on sporting practices. Actor-Network Theory demonstrates how human and technological actors collectively shape sporting experiences, while Afrocentric Theory provides a culturally responsive lens for examining the implications of technological mediation within African contexts.

Together, these theoretical perspectives enable a critical examination of how technology influences athletic performance, fan engagement, cultural identity, and social inclusion in twenty-first-century sport.

Technological Mediation and Athletic Performance

Technological innovations have become integral to contemporary athletic performance, fundamentally transforming the ways athletes train, compete, recover, and interact with coaching personnel. The increasing adoption of wearable technologies, biometric monitoring systems, artificial intelligence (AI), motion-capture devices, and performance analytics platforms has shifted sport from intuition-based approaches towards data-driven decision-making processes. As Qi et al. (2024) observed, digital technologies provide athletes and coaches with unprecedented access to real-time physiological and biomechanical information, thereby enhancing performance optimisation and injury prevention strategies.

One of the most significant developments in modern sport is the widespread use of wearable technologies. Devices equipped with Global Positioning System (GPS) trackers, heart-rate monitors, accelerometers, and sleep-monitoring applications enable the continuous collection of performance-related data. Such technologies allow coaches to assess workload,

monitor fatigue levels, evaluate recovery patterns, and design personalised training programmes. Consequently, athlete preparation has become increasingly scientific and evidence-based. The growing reliance on performance data reflects broader trends in the professionalisation and technologisation of sport, where competitive success is often linked to the effective utilisation of digital resources.

Artificial intelligence has further expanded the possibilities of performance enhancement in sport. AI-driven systems are capable of analysing large volumes of data to identify patterns, predict injury risks, evaluate tactical performance, and support decision-making processes. According to Qi et al. (2024), machine-learning technologies can assist coaches in developing more efficient training strategies by identifying strengths and weaknesses that may not be readily observable through conventional methods. In elite sport, predictive analytics increasingly inform decisions relating to player selection, tactical planning, and long-term athlete development. These developments illustrate how technological systems have evolved from supportive tools into active participants in the management of athletic performance.

The influence of technology is also evident in the area of officiating and competitive fairness. Technologies such as Video Assistant Referee (VAR), Hawk-Eye systems, goal-line technology, and electronic timing devices have been introduced to improve accuracy and reduce human error during competitions. Supporters of these innovations argue that they enhance transparency, fairness, and credibility by providing objective evidence for decision-making. The adoption of such technologies reflects the growing expectation that sporting outcomes should be determined by athlete performance rather than officiating mistakes.

Despite these benefits, the increasing technologisation of athletic performance has generated significant concerns regarding surveillance, autonomy, and athlete welfare. Continuous monitoring through wearable devices and biometric systems has created what some scholars describe as a culture of digital surveillance in sport (Qi et al., 2024). Athletes are increasingly subjected to extensive data collection processes that record physiological conditions, movement patterns, and behavioural tendencies. While such information may contribute to performance improvement, it also raises ethical questions regarding privacy, consent, and ownership of personal data. The commercial value of performance information further complicates these concerns, particularly when athletes have limited control over how their data are stored, shared, or utilised.

From the perspective of Actor-Network Theory, performance outcomes are produced through interactions among athletes, coaches, sports scientists, digital platforms, algorithms, and technological devices. Consequently, athletic achievement cannot be understood solely as the product of human effort; it also emerges through complex socio-technical networks in which technological systems actively shape training practices and decision-making processes. This perspective challenges traditional assumptions that technologies merely support athletic performance and instead highlights their role as influential actors within contemporary sporting environments.

Within African sporting contexts, the adoption of performance-enhancing technologies remains uneven. While elite athletes and professional sports organisations increasingly utilise advanced technological systems, many grassroots programmes continue to face challenges associated with limited funding, inadequate infrastructure, and restricted access to digital resources. Sakala (2024) argued that technological innovation in African sport must be considered within broader discussions of social equity and accessibility. The unequal distribution

of technological resources may contribute to disparities in athlete development opportunities both within and between countries.

Furthermore, indigenous African sporting traditions have historically relied on communal knowledge systems, experiential learning, and culturally embedded approaches to physical development. Sakala and Roux (2024) noted that indigenous games contribute significantly to physical fitness, cultural identity, teamwork, and social cohesion among African communities. These traditional systems of knowledge should not be viewed as inferior alternatives to technologically driven approaches but rather as valuable resources that can complement contemporary innovations. Integrating indigenous knowledge with appropriate technological applications may contribute to more inclusive and culturally responsive models of athlete development.

The growing influence of technology has undoubtedly enhanced athletic performance by improving training efficiency, injury prevention, and competitive fairness. However, these benefits must be balanced against concerns relating to surveillance, unequal access, and the potential marginalisation of indigenous sporting knowledge. A critical understanding of technological mediation therefore requires recognition of both its transformative potential and its broader ethical and sociocultural implications within diverse sporting contexts.

Technological Mediation and Fan Engagement (Sports Spectatorship)

Technological mediation has profoundly reshaped sports spectatorship by transforming how audiences access, interpret, and participate in sporting events. Traditionally, spectatorship was primarily confined to physical attendance at sporting venues; however, the rise of digital broadcasting, livestreaming platforms, social media networks, and mobile applications has expanded sports consumption into a global, interactive, and continuously connected experience (Zhou et al., 2025). As a result, fans are no longer passive observers but active participants in the production, circulation, and interpretation of sports content.

From the perspective of Mediatization Theory, contemporary sport is increasingly structured according to media logic, where visibility, audience engagement, and digital interaction shape institutional priorities (Hjarvard, 2013; Contani & Matitz, 2025). Sporting organisations now design events not only for athletic competition but also for optimal media consumption. This includes scheduling matches to suit global television audiences, creating highlight-driven content for social media platforms, and encouraging athletes to cultivate personal brands that enhance online engagement. According to Abeza et al. (2024), social media platforms have fundamentally altered communication dynamics in sport by enabling continuous interaction between athletes, teams, and fans.

Social media has become a central component of contemporary sports fandom. Platforms such as X, Instagram, TikTok, and Facebook allow fans to engage in real-time discussions, share opinions, create memes, and participate in online fan communities. This participatory culture has transformed spectatorship into an interactive and collaborative experience. Tang et al. (2024) observed that digital engagement in sport is driven by social connection, entertainment value, and community identity, all of which contribute to the emotional intensity of online fandom. Athletes also function as digital influencers whose visibility and engagement metrics significantly influence their commercial value and public perception.

Livestreaming technologies have further expanded access to sporting events by eliminating geographical barriers and enabling real-time global participation. According to Zhou et al. (2025), livestreaming platforms enhance the spectator experience through features such as

multi-angle viewing, instant replays, real-time statistics, and interactive commentary. These innovations have contributed to the globalisation of sport while simultaneously intensifying competition for audience attention within an increasingly saturated digital environment.

The emergence of esports represents one of the most significant developments in technologically mediated spectatorship. Esports exists entirely within digital environments, where both participation and viewership are mediated through online platforms. Tang et al. (2024) noted that esports spectatorship is characterised by strong community identity, interactive engagement, and immersive digital experiences. This blurring of boundaries between playing and watching illustrates how technological mediation has expanded the definition of sport beyond traditional physical activities.

Within African contexts, digital spectatorship has created new opportunities for fan engagement while also exposing persistent inequalities in access to digital infrastructure. The increasing availability of mobile technology and social media has enabled African sports fans to participate in global sporting conversations and follow international competitions in real time. However, disparities in internet connectivity, data affordability, and digital literacy continue to limit full participation in technologically mediated sport cultures (Cisse, 2024). In some cases, commercial streaming models such as Pay-Per-View have increased revenue generation but reduced accessibility for lower-income audiences, thereby reinforcing digital exclusion.

From an Afrocentric perspective, sports spectatorship should be understood not only as a commercial or entertainment activity but also as a cultural practice that contributes to collective identity formation and social cohesion. Digital platforms provide opportunities for documenting and promoting indigenous sporting traditions through livestreaming, storytelling, and online archives (Madima, 2024). Nevertheless, there is a risk that indigenous sports may be reshaped to fit global entertainment standards, potentially altering their cultural meanings and community significance.

Actor-Network Theory further helps to explain how digital spectatorship is produced through interactions among fans, athletes, algorithms, media platforms, and broadcasting technologies. Recommendation systems, trending algorithms, and platform design all influence what content is visible and how audiences engage with it. In this sense, technological systems actively shape fan behaviour and emotional engagement rather than merely transmitting sporting content.

Overall, technological mediation has transformed sports spectatorship into a dynamic, interactive, and globally connected experience. While these developments have expanded access and participation, they have also introduced challenges related to inequality, commercialisation, and cultural representation. A critical understanding of fan engagement therefore requires attention to both the opportunities and contradictions produced by digital sport environments.

Ethical and Sociocultural Implications of Technological Mediation

While technological mediation has significantly enhanced athletic performance and expanded global sports engagement, it also raises complex ethical and sociocultural concerns. These concerns relate to surveillance, data privacy, commodification of sport, algorithmic control, unequal access to technology, and the potential erosion of cultural identity. As Qi et al. (2024) observed, the increasing integration of digital systems into sport has created new forms of data extraction and monitoring that extend beyond performance enhancement into the regulation of athlete behaviour and identity.

One of the most pressing ethical issues is athlete surveillance. The widespread use of biometric monitoring systems, wearable sensors, and AI-driven analytics has resulted in

continuous data collection on athletes' physiological and behavioural conditions. While such technologies are often justified in terms of performance optimisation and injury prevention, they also raise questions regarding privacy, consent, and ownership of personal data. Athletes increasingly operate within systems where performance metrics are constantly evaluated, shared, and monetised, often without full control over how their data are used (Qi et al., 2024). This development reflects a broader shift towards datafication in sport, where human performance is translated into quantifiable and commercially valuable information.

Closely related to surveillance is the issue of commodification. Digital platforms and algorithmic systems have intensified the commercialisation of sport by transforming athletes, teams, and even fans into data-generating entities. According to Contani and Matitz (2025), algorithmic media environments prioritise engagement metrics such as clicks, views, and shares, which influence how sporting content is distributed and consumed. This commercial logic can shape sporting priorities, privileging entertainment value and marketability over sporting integrity and cultural significance. As a result, sport increasingly operates within a digital economy in which attention itself becomes a commodity.

From an Actor-Network Theory perspective, these developments illustrate how non-human actors such as algorithms, platforms, and wearable devices actively participate in shaping sporting outcomes and social relations. Rather than being neutral tools, these technologies contribute to decision-making processes that affect athlete selection, performance evaluation, and fan engagement. This distributed agency complicates traditional understandings of responsibility and control within sport, raising important questions about accountability in technologically mediated environments.

Within African sporting contexts, ethical concerns are further compounded by issues of digital inequality and infrastructural limitation. Cisse (2024) noted that the adoption of Pay-Per-View broadcasting models in African sports such as Senegalese wrestling has increased commercial revenues but simultaneously restricted access for economically disadvantaged audiences. This illustrates how technological mediation can deepen existing inequalities by prioritising commercial sustainability over inclusive participation. In many regions, limited access to reliable internet connectivity, high data costs, and inadequate digital infrastructure continue to exclude large segments of the population from fully participating in digital sport cultures.

Another significant sociocultural concern is the potential erosion of indigenous sporting traditions. Indigenous African sports are deeply embedded within cultural, spiritual, and communal practices that extend beyond entertainment or competition. Scholars such as Sakala (2024) and Madima (2024) argue that while digital technologies offer opportunities for documenting and preserving these traditions, they may also contribute to cultural distortion when indigenous games are adapted for global digital audiences. The transformation of culturally rooted sporting practices into commodified digital content risks undermining their original meanings and social functions.

Afrocentric Theory provides a critical framework for addressing these concerns by emphasising cultural continuity, community participation, and epistemic justice. From this perspective, technological development in sport should not be evaluated solely in terms of efficiency or economic gain but also in terms of its impact on cultural identity and social cohesion. Sakala and Roux (2024) emphasise that indigenous games play an important role in fostering community values, physical development, and intergenerational knowledge transfer.

Therefore, technological integration should be guided by culturally sensitive approaches that respect and preserve indigenous sporting heritage.

Ultimately, the ethical and sociocultural implications of technological mediation highlight the need for a balanced approach to sport development. While digital technologies offer significant opportunities for innovation, performance enhancement, and global connectivity, they also introduce risks related to inequality, surveillance, and cultural marginalisation. A critical and context-sensitive approach is therefore necessary to ensure that technological advancement in sport remains inclusive, ethical, and culturally responsive.

Conclusion

This paper examined technological mediation in twenty-first-century sport, focusing on its influence on athletic performance, fan engagement, and broader sociocultural dynamics. Drawing on Mediatization Theory, Technological Determinism, Actor-Network Theory, and Afrocentric Theory, the study demonstrated that sport has increasingly evolved into a technologically mediated system in which digital infrastructures, algorithms, athletes, and audiences interact to produce contemporary sporting experiences.

A key finding of this study is that technological mediation has significantly enhanced athletic performance through data-driven training systems, wearable technologies, artificial intelligence, and advanced officiating tools. These innovations have improved decision-making, reduced human error, and contributed to more structured and scientific approaches to athlete development. However, the study also highlights that these benefits are accompanied by emerging concerns related to surveillance, data ownership, and athlete autonomy, indicating that performance enhancement is inseparable from broader ethical questions.

In terms of spectatorship, the paper found that digital technologies have transformed fans from passive consumers into active participants within interactive media environments. Livestreaming platforms, social media networks, and algorithm-driven content distribution systems have expanded global access to sport while simultaneously intensifying commercialisation and attention-based economies. Esports further illustrates the expansion of sport into fully digital environments, reshaping traditional boundaries between participation and spectatorship.

Importantly, the study underscores that the effects of technological mediation are unevenly distributed. Within African contexts, disparities in digital infrastructure, access to technology, and economic resources continue to shape participation in technologically mediated sport. While digital platforms offer opportunities for visibility and cultural preservation, they also risk reinforcing exclusion and commodifying indigenous sporting practices. This finding reinforces the argument that technological innovation in sport cannot be understood outside its social, economic, and cultural contexts.

From an Afrocentric perspective, the study contributes to sport scholarship by emphasising the importance of indigenous knowledge systems, cultural identity, and community-centred approaches to technological development. Rather than viewing technology as universally beneficial or neutral, an Afrocentric lens highlights the need to evaluate innovation in terms of its impact on cultural continuity, equity, and social inclusion. This perspective challenges dominant Eurocentric frameworks that often prioritise efficiency and commercial value over cultural sustainability.

The theoretical integration employed in this study further demonstrates that technological mediation is best understood as a socio-technical process involving dynamic interactions between human and non-human actors. Mediatization Theory explains the growing

influence of media logic in sport, Technological Determinism highlights the transformative power of innovation, Actor-Network Theory reveals the distributed agency of technological systems, and Afrocentric Theory ensures contextual sensitivity to African sporting realities.

Overall, the paper concludes that technological mediation in sport is both transformative and contradictory. While it enhances performance, accessibility, and global connectivity, it simultaneously produces challenges related to inequality, surveillance, commodification, and cultural marginalisation. Future research should move beyond theoretical analysis to empirical investigations within specific African sporting contexts in order to better understand how technological systems are experienced at local levels. Policymakers and sporting institutions must therefore adopt balanced, ethical, and culturally responsive approaches to technological integration in sport.

Recommendations

Based on the issues identified in this review, the following recommendations are proposed:

1. Sports organisations and governing bodies should establish clear policies on the collection, management, and use of athletes' biometric and performance data to safeguard privacy and ensure ethical use of digital technologies.
2. Governments and sports stakeholders in Africa should invest in digital infrastructure and affordable access to sports technologies to minimise inequalities in participation, performance development, and sports spectatorship.
3. Efforts should be made to utilise digital technologies for the documentation, preservation, and promotion of indigenous sporting practices while maintaining their cultural integrity and community significance.
4. Sport technology policies and programmes in African contexts should incorporate culturally responsive and Afrocentric perspectives to ensure that technological innovation supports local realities and indigenous knowledge systems.
5. Future studies should employ empirical approaches to examine how athletes, coaches, administrators, and fans experience technological mediation in different African sporting contexts.

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