

The impact of metaverse engagement on fan loyalty: The mediating role of immersive experience

Mohamed Soliman

Teaching assistant, Department of Business Administration, Cairo university

mohamed_soliman@foc.cu.edu.eg

Abstract:

The emergence of the metaverse is transforming the landscape of sports fandom by offering interactive, immersive, and personalized virtual experiences. This conceptual paper explores the impact of metaverse engagement on fan loyalty, with a specific focus on the mediating role of immersive experience. Drawing on consumer experience theory and the uses and gratifications framework, the study synthesizes recent literature to examine how features such as virtual reality, augmented interactivity, and gamified environments shape fans' emotional and behavioral loyalty. The paper proposes that immersive experience—characterized by perceived presence, interactivity, and emotional involvement—acts as a psychological bridge linking metaverse engagement to long-term fan loyalty. A conceptual model is developed to illustrate these relationships and guide future empirical investigations. By providing a theoretical foundation and identifying key constructs, the study contributes to the growing discourse on digital transformation in sports, offering practical implications for sports marketers, teams,

and metaverse platform developers seeking to enhance fan retention strategies in virtual environments.

Keywords: metaverse, fan loyalty, immersive experience, sports marketing, virtual engagement, customer experience

المخلص:

يُحدث ظهور عالم الميتافيرس تحولاً في مشهد مشجعي الرياضة من خلال توفير تجارب افتراضية تفاعلية وغامرة ومخصصة. تستكشف هذه الورقة البحثية المفاهيمية تأثير تفاعل الميتافيرس على ولاء المشجعين، مع التركيز بشكل خاص على الدور الوسيط للتجربة الغامرة. بالاعتماد على نظرية تجربة المستهلك وإطار الاستخدامات والإشباع، تُلخص الدراسة الأدبيات الحديثة لدراسة كيفية تأثير ميزات مثل الواقع الافتراضي والتفاعل المُعزز والبيئات المُصممة بأسلوب الألعاب على ولاء المشجعين العاطفي والسلوكي. تقترح الورقة أن التجربة الغامرة - التي تتميز بالحضور المُدرك والتفاعل والمشاركة العاطفية - تعمل كجسر نفسي يربط تفاعل الميتافيرس بولاء المشجعين طويل الأمد. طُوّر نموذج مفاهيمي لتوضيح هذه العلاقات وتوجيه الأبحاث التجريبية المستقبلية. من خلال توفير أساس نظري وتحديد المفاهيم الرئيسية، تساهم الدراسة في الخطاب المتنامي حول التحول الرقمي في الرياضة، وتقدم تأثيرات عملية لمسوقي الرياضة والفرق ومطوري منصات ميتافيرس الذين يسعون إلى تعزيز استراتيجيات الاحتفاظ بالمشجعين في البيئات الافتراضية.

الكلمات المفتاحية:

ميتافيرس، ولاء المشجعين، تجربة غامرة، تسويق رياضي، مشاركة افتراضية، تجربة العملاء

1. Introduction

The sports industry has long relied on in-person attendance, media broadcasting, and traditional fan engagement strategies to foster loyalty and sustain growth. However, the rapid evolution of digital technologies, particularly the emergence of the metaverse, has opened new avenues for redefining the sports fan experience (Chohan & Schmidt-Devlin, 2024). The metaverse, conceptualized as a persistent, shared, and immersive virtual environment, offers an unprecedented platform where fans can interact with teams, athletes, and other supporters beyond the constraints of physical space (Lee et al., 2021). As sports organizations seek innovative ways to maintain and enhance fan loyalty, the integration of metaverse technologies presents both an opportunity and a strategic imperative.

Fan loyalty, a critical driver of sustainable competitive advantage in sports marketing, is traditionally cultivated through emotional connections, team identification, and consistent engagement (Yoshida et al., 2018). In the metaverse, this loyalty can be amplified through immersive experiences that enhance perceived presence, interactivity, and emotional resonance (Taufik et al., 2021). Immersive experience—defined as the psychological state of being deeply engaged and emotionally involved in a mediated environment—has been shown to significantly influence consumer attitudes and behavioral intentions (Slater & Sanchez-

Vives, 2016; Buhalis et al., 2022). As such, understanding how immersive experiences mediate the relationship between metaverse engagement and fan loyalty is essential for both theoretical advancement and managerial practice.

Although early empirical studies have begun to explore digital fan engagement and virtual reality in sports, there remains a gap in conceptualizing how the immersive dimensions of the metaverse influence loyalty-building processes (Kim & Kim, 2024; Bányai et al., 2019). Most existing frameworks fail to capture the dynamic, interactive, and affective nature of virtual fandom in metaverse environments. This paper aims to fill this theoretical gap by proposing a conceptual model that positions immersive experience as a key mediator between metaverse engagement and fan loyalty. The study draws upon consumer experience theory and the uses and gratifications framework to examine the psychological and behavioral mechanisms underlying fan interactions in virtual spaces.

By articulating this relationship, the paper contributes to the growing literature on metaverse applications in sports marketing and provides a foundation for future empirical research. Furthermore, it offers practical insights for sports organizations, platform developers, and marketers seeking to optimize virtual engagement strategies to cultivate deeper and more enduring fan relationships in the digital era.

2. Literature Review

2.1 Fan engagement in the digital era

Fan engagement has evolved dramatically with the advancement of digital technology, reshaping how sports organizations interact with their audiences. Traditionally, fan engagement relied heavily on in-person attendance, televised events, and merchandising; however, digital platforms—such as social media, mobile applications, and streaming services—have introduced new touchpoints that facilitate constant and personalized communication between fans and sports entities (Yoshida et al., 2018). While these tools have expanded the reach and frequency of engagement, they often lack the depth of experiential involvement found in live attendance. As a result, there is an emerging interest in immersive technologies that can replicate or even enhance live experiences through virtual platforms (Demir et al., 2023).

2.2 The metaverse and its role in sports

The metaverse, conceptualized as a network of 3D virtual worlds that foster social interaction through augmented and virtual reality, is gaining momentum as a transformative platform in the sports industry (Lee et al., 2021). Sports organizations are exploring metaverse applications ranging from virtual stadiums and avatar-based attendance to NFT ticketing and blockchain-enabled fan rewards (Kim & Manoli, 2024). These technologies not only

replicate aspects of physical fan participation but also enable new forms of interaction, such as virtual meet-and-greets, digital collectibles, and co-creation of content, thereby intensifying fans' sense of involvement and co-presence (Buhalis et al., 2022).

The growing accessibility of immersive technologies has also accelerated metaverse adoption among digitally native fans (Mahajan et al., 2023). This aligns with a broader trend in sports marketing that emphasizes hybrid and digital-first fan engagement strategies. However, while several empirical studies have investigated the technical dimensions of these innovations, there remains a conceptual gap in understanding how these virtual experiences influence fan loyalty through psychological processes such as immersion and emotional connection (Guttentag et al., 2023).

2.3 Metaverse engagement: dimensions and mechanisms

Metaverse engagement refers to the degree of user interaction, participation, and cognitive-emotional investment in virtual environments. Engagement in this context is often multi-dimensional, comprising cognitive attention, emotional attachment, behavioral participation, and social interaction (Dwivedi et al., 2021). Features such as interactivity, real-time feedback, gamification, and personalization foster deep user engagement by enhancing user agency and involvement (Koivisto & Hamari, 2019). In the context of sports, these

features enable fans to feel more connected to teams and athletes, even in the absence of physical presence.

Moreover, engagement within metaverse platforms is often intensified by their immersive qualities, which elicit higher levels of focus and emotional resonance than traditional digital platforms (Shamim et al.,2025). When fans are actively participating in avatar-based interactions, customizing virtual merchandise, or watching live matches in virtual arenas, they are not merely passive consumers—they are part of a co-created virtual culture (Singh et al.,2025). Despite these advancements, there is limited theoretical exploration of how such engagement translates into sustainable fan loyalty.

2.4 Immersive experience as a mediator

Immersive experience is a psychological state characterized by a high level of perceptual and emotional involvement in a virtual environment, often facilitated by sensory stimuli and interactive design (Slater & Sanchez-Vives, 2016). In sports contexts, immersive experiences are crucial because they replicate the excitement, community, and spectacle of live sports attendance—factors closely tied to loyalty and long-term fandom (Buhalis et al., 2022). Presence, flow, and narrative transportation are key components of immersion, enabling users to suspend disbelief and feel “present” in the virtual space (Taufik et al., 2021).

Emerging research indicates that immersive experience may act as a mediating variable linking metaverse engagement to fan loyalty (Dolgun et al.,2024). This is because engagement alone, without emotional depth, may not generate the psychological commitment required for sustained loyalty (Funk & James,2006). By eliciting affective responses such as joy, pride, and belonging, immersive experiences can transform metaverse engagement into meaningful connections with sports brands and teams (Miah et al.,2020).

2.5 Fan loyalty in the metaverse age

Fan loyalty is a multifaceted construct involving both attitudinal and behavioral components, including repeat attendance, merchandise purchases, advocacy, and emotional attachment (Yoshida et al., 2018; Biscaia et al., 2013). Loyalty has traditionally been cultivated through face-to-face experiences and community rituals; however, the metaverse offers new pathways for fostering loyalty through virtual identity formation, social bonding, and experiential continuity (Bilgihan et al.,2024; Funk & James, 2006). With the shift toward digital consumption, understanding how loyalty manifests in virtual settings is essential for sports marketers.

Preliminary evidence suggests that fans who perceive high levels of interactivity and immersion in digital environments are more likely to develop brand trust, emotional alignment, and

advocacy behaviors (Koivisto & Hamari, 2019). Nonetheless, empirical and theoretical gaps remain regarding the psychological mechanisms, particularly immersion, that mediate this relationship in the context of the metaverse.

2.6 Research Gap

Although the integration of metaverse technologies into the sports industry is rapidly advancing, literature lacks a cohesive framework explaining how metaverse engagement translates into fan loyalty through immersive experience. While previous studies have investigated fan engagement, virtual reality, and loyalty independently (Yoshida et al., 2014; Kim et al., 2024; Brakus et al., 2009), few have examined their interdependence within a single conceptual model. This paper addresses this gap by proposing that immersive experience serves as a critical mediator that enhances the loyalty-building potential of metaverse engagement in sports fandom.

3. Theoretical Framework

This section develops the conceptual foundation of the study by integrating two key theoretical perspectives—Consumer Experience Theory (CET) and Uses and Gratifications Theory (UGT). These theories are then employed to formulate hypotheses that explain the relationships between metaverse engagement, immersive experience, and fan loyalty in the context of sport.

3.1 Theoretical Foundations

The proposed model draws on Consumer Experience Theory (CET) and Uses and Gratifications Theory (UGT) to explain how fan engagement in metaverse environments can evolve into long-term loyalty. CET emphasizes the centrality of affective, sensory, and cognitive experiences in shaping consumer responses to digital interactions (Gentile et al.,2007). According to Schmitt (1999), brand experiences that evoke multisensory and emotional responses foster lasting psychological bonds. In sport contexts, this theory explains how virtual engagement can simulate presence, excitement, and emotional attachment—core elements of fan identity and commitment (Brakus et al., 2009).

Complementing this, UGT views individuals as active agents who select media platforms to satisfy specific psychological, social, or functional needs. Applied to metaverse environments, this framework suggests that fans engage with immersive sport content to fulfill desires for entertainment, self-expression, and social connectivity (Katz et al., 1974; Quan-Haase & Young,2010). The interactivity and gamification features embedded in the metaverse provide affordances that align well with these gratifications (Cha et al.,2024).

By integrating CET and UGT, the framework acknowledges that digital sport engagement is not merely about

usage frequency but about emotionally charged, goal-directed experiences. Together, these theories provide a robust foundation for understanding how immersive environments transform digital engagement into loyalty through psychological processes.

3.2 Development of Hypotheses

The metaverse represents a significant shift in how sports organizations engage with fans, offering interactive, immersive, and personalized environments. Grounded in UGT, fan engagement in these digital spaces can be understood as goal-directed behavior, where individuals seek to satisfy needs such as entertainment, identity expression, and social interaction (Sundar & Limperos, 2013; Katz et al., 1974). Metaverse platforms are often designed to foster interactivity, autonomy, and social presence—factors that drive deeper engagement and prolonged use.

CET posits that emotionally resonant, affect-laden experiences—particularly those involving multisensory and relational elements, form the basis for long-term consumer loyalty (Schmitt, 1999; Holbrook & Hirschman, 1982). In metaverse-based fan engagement, the experience of “being there” via avatars, VR immersion, or gamified participation can create strong emotional responses (Pizzo, Na, & Funk, 2022). These experiences make digital interactions personally meaningful and memorable, thus increasing fans’ psychological investment and affective commitment to sport brands.

Moreover, existing literature warns that engagement without experiential richness may not be sufficient to foster enduring loyalty (Yoshida et al., 2014). This supports the argument that immersive experience serves as a critical mediating mechanism, transforming metaverse engagement from a functional activity into a psychologically embedded fan-brand relationship (Kim et al., 2022).

Accordingly, the following hypotheses are proposed:

H1: Metaverse engagement has a positive effect on immersive experience.

H2: Immersive experience has a positive effect on fan loyalty.

H3: Metaverse engagement has a positive effect on fan loyalty.

H4: Immersive experience mediates the relationship between metaverse engagement and fan loyalty.

3.3 Proposed research model

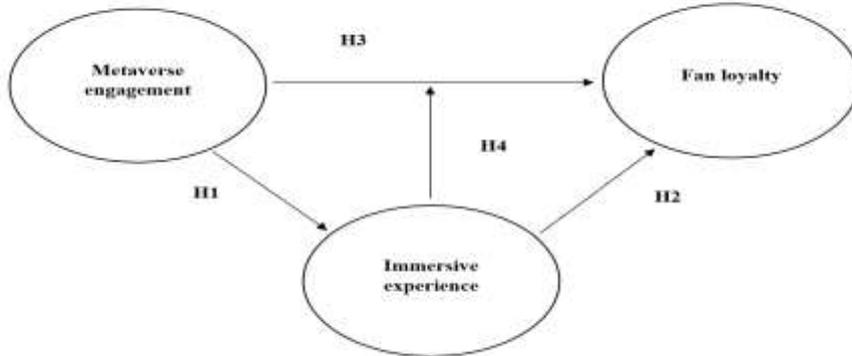


Figure 1. Proposed research model

4. Discussion and Implications

4.1 Theoretical Implications

This study makes a significant contribution to the evolving literature on digital fan behavior by integrating Consumer Experience Theory (CET) and Uses and Gratifications Theory (UGT) into a unified conceptual framework tailored to the metaverse sport environment. By situating immersive experience as a central mediating construct, the model reframes how digital engagement in sport contexts should be theorized, moving beyond traditional notions of passive consumption and toward a

richer understanding of emotionally meaningful, self-directed, and socially embedded experiences.

CET posits that customer experiences are shaped through the interplay of sensory, affective, cognitive, and relational stimuli, all of which contribute to brand-related outcomes (Brakus et al., 2009). When applied to the metaverse, CET helps explain how features such as virtual stadiums, avatar customization, live events, and sensory feedback can elicit emotions like excitement, nostalgia, or belonging—critical precursors to brand attachment (Brakus et al., 2009; Schmitt, 1999). Meanwhile, UGT offers a complementary perspective by emphasizing that users are not merely recipients of digital content but active participants who seek specific gratifications such as entertainment, identity reinforcement, escapism, and social interaction (Boudkouss & Djelassi, 2021). This theoretical integration allows for a multi-layered understanding of how fan engagement in the metaverse is both experientially immersive and motivationally driven.

Importantly, this conceptualization challenges the assumption that increased digital touchpoints or frequency of interaction automatically lead to stronger fan loyalty. As recent sport marketing research suggests, engagement without affective depth may be insufficient for cultivating durable psychological commitment (Kim & James, 2019; Yoshida et al., 2014). Instead, it

is the quality and richness of the immersive experience that determines whether fan interaction translates into meaningful emotional investment and sustained loyalty (Mou et al.,2024). This aligns with emerging discourse in consumer behavior emphasizing transformative experiences—those that shift self-perception, deepen emotional resonance, and build identity coherence.

The model thus calls for a paradigmatic shift in how scholars conceptualize digital fan engagement: from behaviorist models that privilege observable metrics (e.g., clicks, time spent, visits) to experiential models that capture cognitive-emotional mechanisms underlying attachment, advocacy, and commitment. Moreover, by extending CET and UGT into a novel technological domain—the metaverse—this study contributes to theory-building in sport management, digital marketing, and media psychology, offering an integrated lens for exploring emotionally resonant fan ecosystems in immersive digital environments.

4.2 Practical Implications

From a practical standpoint, the proposed framework provides strategic guidance for sport organizations, marketers, and digital experience designers navigating the emerging metaverse landscape. While many professional teams and leagues are adopting metaverse technologies—offering virtual ticketing,

fan zones, or collectible NFTs, this study highlights that technological novelty alone is not sufficient to build enduring fan loyalty. Rather, the strategic imperative lies in designing immersive experiences that are emotionally engaging, psychologically meaningful, and socially connected.

Organizations must move beyond static digital replication and aim to engineer virtual spaces that simulate emotional intensity and active co-creation. For instance, real-time social interaction with athletes or other fans, gamified elements (e.g., quests, points, achievements), and narrative-driven experiences (e.g., reliving iconic matches in VR) can evoke a sense of presence, flow, and emotional contagion—all central to the immersive experience construct. Platforms should also support avatar personalization, virtual rituals, and community-building features to foster identity expression and affiliation. These elements align closely with gratifications identified in UGT—particularly entertainment, personal identity, and social integration.

Additionally, the research calls for segmenting and tailoring immersive content based on fan motivations and preferences. Casual fans may seek entertaining highlights and light interactivity, whereas highly involved fans may desire deeper narrative involvement, strategic gameplay, or exclusive behind-the-scenes access. By aligning immersive design with fan

personas and psychological needs, sport organizations can cultivate stronger affective bonds and encourage repeat engagement.

In highly competitive and fragmented digital ecosystems, where attention is a scarce commodity, loyalty depends on more than just access—it depends on emotional immersion and perceived value. Therefore, this framework encourages practitioners to shift from content-centred strategies to experience-centred strategies, where the focus is on crafting psychologically resonant moments that fans are motivated to revisit and share. Moreover, metaverse initiatives should be evaluated not just by engagement volume but also by metrics such as emotional impact, sense of community, brand attachment, and experiential satisfaction.

5. Conclusion and Future Research

5.1 Conclusion

This conceptual investigation explored the transformative relationship between metaverse engagement and fan loyalty within the evolving landscape of digital sport. By introducing immersive experience as a mediating construct, the study contributes to a growing body of literature that seeks to understand not only what fans do in virtual environments but

how and why these interactions contribute to enduring emotional bonds with sport brands, teams, and communities. The theoretical integration of Consumer Experience Theory (CET) and Uses and Gratifications Theory (UGT) offers a robust, multidimensional lens through which fan behavior in metaverse spaces can be interpreted.

CET emphasizes the role of multisensory, effective, and symbolic experiences in shaping brand perceptions and emotional attachment (Brakus et al., 2009). These dimensions are increasingly relevant in immersive virtual environments, where fans can interact with digital replicas of stadiums, players, or memorabilia in real time. UGT, in contrast, foregrounds the agency of users who actively seek out content and platforms that fulfil specific psychological and social needs, such as entertainment, identity construction, escapism, and social affiliation (Mou et al.,2024). When these frameworks are integrated, immersive experiences in the metaverse are understood not simply as passive entertainment, but as strategic environments where fans co-create meaning, negotiate identity, and reinforce community ties (Malerba,2023).

By positioning immersive experience at the core of the loyalty-building process, this study shifts the scholarly conversation away from surface-level metrics (e.g., click-through rates or view counts) and toward deeper, psychologically

meaningful engagement indicators. Such a perspective is not only timely given the increasing investment of sports organizations in digital transformation and metaverse innovation but is also essential for understanding the long-term emotional loyalty that sustains fanbases in an era of hyper-personalized, on-demand content consumption (Dhote et al.,2025). This paper therefore offers a foundational framework for future empirical inquiry and invites scholars and practitioners to reframe digital sport engagement through the lenses of emotional resonance, virtual embodiment, and participatory culture.

5.2 Future Research Directions

Given the conceptual nature of the proposed model, several avenues for empirical and theoretical development remain open for future scholarly investigation. First, quantitative validation of the model is essential to assess the structural relationships between metaverse engagement, immersive experience, and fan loyalty. This could be achieved through structural equation modeling (SEM) or partial least squares (PLS) techniques, which would allow for the testing of both direct and mediated effects. Researchers should develop or adapt psychometrically valid scales that capture the specificities of the metaverse context, such as avatar-based interaction, virtual presence, and perceived realism, to operationalize immersive experience and fan loyalty in a digital sport setting.

Second, qualitative methodologies could yield rich insights into the lived experiences of fans in metaverse environments. In-depth interviews, digital ethnographies, and focus groups with highly engaged fans can uncover the affective dimensions, symbolic meanings, and social dynamics embedded in their interactions with metaverse platforms. For example, exploring how fans experience nostalgia, ritual, and identity performance in virtual stadiums or live-streamed VR events could extend the emotional and cultural dimensions of CET in the sport domain.

Third, future research should investigate moderating variables that may condition the strength or direction of the proposed relationships. Potential moderators include:

- Fan involvement level: Casual vs. die-hard fans may engage differently in virtual environments.
- Technological familiarity: Previous experience with VR/AR may influence comfort and perceived realism.
- Generational cohorts: Gen Z and millennials may respond more positively to gamified or avatar-driven features than older generations.
- Cultural differences: The meanings fans assign to virtual experiences may vary significantly across collectivist vs. individualist cultures.

Moreover, comparative research could enhance the generalizability of findings by examining different types of sports (e.g., football, basketball, esports) or platforms (e.g., Meta Horizon, Roblox, Decentraland, proprietary club-developed platforms). Each sport and platform may offer different affordances for immersive engagement and thus elicit different psychological responses. For instance, esports platforms may offer higher interactivity and gamification, while traditional sports may emphasize nostalgia and realism (Stringfield,2022).

Finally, scholars should explore longitudinal designs to assess how fan loyalty evolves over time in response to repeated immersive interactions. This would allow researchers to capture dynamic processes such as identity reinforcement, ritual formation, or community cohesion within digital sport ecosystems. The convergence of physical and digital environments—through hybrid events, smart stadiums, and digital collectibles (e.g., NFTs)—also opens avenues for examining how cross-reality experiences shape the fan journey.

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