

Revolutionizing Fan Engagement: Adapting To Changing Trends and Technologies in The Vibrant Indian Sports Landscape

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ABSTRACT

The Indian sports industry is undergoing a substantial transformation in fan engagement, driven by evolving trends and technological innovations. This study comprehensively analyses the current state, methodologies, and implications of fan engagement within the Indian sports sector. In response to the COVID-19 pandemic, there has been a noticeable shift in traditional fan behaviour, with a decline in physical gatherings and a surge in alternative forms of participation such as co-watching, online discussions, sports betting, and content sharing. The research employs a multifaceted methodology, combining data collection, surveys, and trend analysis. It explores the Impact of cutting-edge technologies like Over-the-Top (OTT) media services, Non-Fungible Tokens (NFTs), blockchain technology, Artificial Intelligence (AI), and Virtual Reality (VR) on reshaping fan engagement. The dynamic and tech-driven nature of the Indian sports industry necessitates a holistic understanding of contemporary fan engagement strategies. This study aims to analyse the current landscape of fan engagement in Indian sports, explore methodologies employed, and assess the Impact of technological innovations on fan behaviour. Quantitative methods like data collection through surveys have been employed to gain insights into emerging trends and their influence on fan engagement. Survey data reveals the enduring dominance of cricket (46%) and the growing prominence of football (29%) among Indian sports fans. Notably, there is significant trust (46%) in in-game analysis technologies, indicating fans' readiness to embrace technological enhancements. While live stadium experiences remain popular, the survey underscores the role of digital platforms, with 57% preferring Hotstar for sports content. The rising popularity of fantasy league apps and the recognition of social media's Impact on player performance (64%) present opportunities for digital engagement. The study concludes by offering recommendations for businesses and stakeholders to adapt to the changing landscape. It underscores the importance of integrating innovative technologies, fostering online fan communities, and tailoring content and experiences to cater to the evolving expectations of Indian sports enthusiasts.

Keywords: Fan Engagement; Sports Industry; India; Co-watching; Sports Betting; Over-the-Top (OTT); Non-Fungible Tokens (NFTs); Artificial Intelligence (AI); Virtual Reality (VR)


1. INTRODUCTION

In the Indian sports industry, fan engagement has emerged as a vital aspect of the sports ecosystem. The allure of sports has deep roots in the nation's history, from ancient sporting events to the enthusiasm

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surrounding contemporary leagues and tournaments. As Indian society has evolved, so has how fans connected with their favorite sports teams and athletes. With the advent of modern technology and changing demographics, these connections have taken on a new dimension, extending beyond traditional forms of support. Understanding fan engagement in the Indian sports landscape is of paramount importance. The Indian sports industry is a dynamic and rapidly growing sector, encompassing cricket, football, and various other sports. As this industry expands, the relationship between fans and teams becomes increasingly crucial. Moreover, the financial dimension of fan involvement is a significant driver, impacting aspects like ticket sales, merchandise purchases, and access to sports broadcasts. Technology has played a pivotal role in redefining fan engagement in India. With more than 450 million social media users in 2021 (Rautela, 2021), digital platforms have become central to fan interaction. Hussain et al. (2021) underscores the transformative role of mobile apps, social media platforms, and streaming services in making fan engagement more accessible and dynamic.

Fantasy sports and sports betting have surged in India (Gupta et al., 2022). These activities offer fans interactive ways to engage with their favourite sports, contributing to deepened fan involvement. Kumar (2021) reported robust growth in the Indian online gaming industry, including fantasy sports. In contrast, adopting augmented reality (AR) and virtual reality (VR) applications shape immersive fan experiences, bringing them closer to the action. This comprehensive review underscores fan engagement's dynamic and multifaceted nature in the Indian sports industry. The integration of technology, active fan participation, the power of social media, fantasy sports and betting, and data-driven personalization are pivotal factors shaping the future of fan engagement strategies in India's vibrant sports landscape (Basu, 2023). To maximize the potential of this dynamic ecosystem, it is imperative to comprehend the nuances of fan engagement within the Indian context. This study addresses the fundamental question: What are fan engagement's key dimensions and determinants in the Indian sports industry? This research analyses the various facts of fan engagement within the Indian sports sector. This involves examining the Impact of technological advancements, fan behavior, and financial considerations on the engagement between fans and their beloved sports teams.

2. LITERATURE REVIEW

Fan engagement in the Indian sports industry is remarkably transformed, shaped by technological innovations, shifting demographics, and evolving consumer behaviors. This comprehensive literature review synthesizes insights from crucial research reports, providing a comprehensive understanding of the evolving landscape of fan engagement within the Indian sports sector. Technology has played a pivotal role in redefining fan engagement in India. With more than 450 million social media users in 2021 (Rautela, 2021), digital platforms have become central to fan interaction. Hussain et al. (2021) underscores the transformative role of mobile apps, social media platforms, and streaming services in making fan engagement more accessible and dynamic. Indian fan behaviour has transitioned from passive spectatorship to active engagement. Gupta et al. (2022) delves into how fans have become integral to the sports ecosystem through active participation. Social media platforms have emerged as influential tools for fan engagement in India, a country with over 450 million social media users in 2021.

A study by Singh & Sharma (2022) revealed that 63% of Indian sports fans appreciate personalized offers and content from their favourite teams. The increasing focus on data-driven personalization of fan experiences is evident, adding depth to the connection between fans and their teams. Fantasy sports and online gaming have evolved into dynamic sectors within India, shaped by a young and tech-savvy

population's increasing enthusiasm. According to Singh & Sharma (2022), the Indian Federation of Sports Gaming (IFSG), the online gaming industry is anticipated to reach a market value of approximately \$3.7 billion by 2024, driven by the proliferation of smartphones and easy access to high-speed internet. This explosive growth is closely related to the rising popularity of fantasy sports platforms like Dream11, which boasts over 100 million users, making India a hotbed for fantasy gaming (Dream11 User Base Data). Projections suggest that the online gaming industry will continue to surge in the coming years, fueled by the emergence of various gaming platforms and the growing digital infrastructure in India (Online Gaming Industry Forecast). These sectors promise entertainment and substantial economic contributions, reflecting the evolving digital landscape in the country (Struckell et al., 2021).

2.1 Fan Engagement Initiatives

2.1.1 IPL Fan Parks

The Board of Control for Cricket in India (BCCI) has spearheaded the establishment of Indian Primera League fan parks in recent years to provide a stadium-like experience to cricket enthusiasts in previously underserved markets. Unlike one of the wealthiest cricket organizations globally, entry to these fan parks is consistently accessible. The VIVO IPL Fan Park 2018 initiative is designed to connect with fans in areas with limited entertainment options, spanning 19 states and 36 cities. Among the 36 locations across these 19 states where BCCI has established fan parks for the IPL, only four—Raipur, Gwalior, Rajkot, and Thiruvananthapuram—have previously hosted international cricket matches. This strategic selection extends to cities and towns with an average population of 10 lakh (1 million), illustrating a proactive approach to reaching previously untapped cricket-loving markets—a compelling example of expanding cricket's reach to hitherto unexplored demographics.

2.1.2 Real Madrid Fan App

The Real Madrid fan app is a comprehensive hub designed to provide an unparalleled experience for enthusiasts, delivering a seamless blend of information, community engagement, and emotional connection. Users can stay on top of the action with real-time match updates, live scores, and immediate access to post-match results, all directly from the iconic Santiago Bernabéu Stadium. Beyond the pitch, the app serves as a central hub for all things Real Madrid, offering confirmed transfers, transfer rumours, and breaking news to keep fans well-informed about the latest developments. (Tribuna Trading Ltd, 2023)

Fostering a sense of community, the app boasts a vibrant fan space where users can engage in chat rooms featuring heated discussions, comments, and polls, creating a virtual environment where supporters from around the globe can share their passion for the club. The inclusion of a blogging platform empowers fans to contribute their own posts, providing a diverse array of perspectives and analyses within the app. For those seeking in-depth insights, the app offers match previews, anticipated line-ups, and tactical analyses, enhancing the strategic understanding of upcoming fixtures. While live game broadcasts may not be available, fans can relive the excitement through video highlights capturing key moments and plays. Post-match, users can delve into reports and editorial columns, supplemented by expert opinions, providing a nuanced understanding of the team's performance and broader football dynamics. The app ensures fans are well-versed in the club's tournament journey with schedule, standings, and detailed statistics for all major competitions. The fan experience is further personalized with adjustable push notifications, allowing users to receive updates on top news, line-ups, kick-off times, goals, and other crucial match events. Silent mode

options provide customization to suit individual notification preferences. Beyond the analytical, the app fosters emotional connections by encouraging fans to share their pure emotions and experiences with other supporters. Altogether, the Real Madrid fan app stands as a holistic platform, catering to the diverse needs of fans and creating a virtual home for the global Real Madrid community (Microsoft, 2015).

2.1.3 Messi Experience Park (MEP)

The Messi Experience Park (MEP) stands as a ground breaking destination for football aficionados, delivering an unparalleled fusion of technology and immersive experiences through its ten distinct attractions. Among these, cutting-edge video mappings captivate visitors with dynamic and interactive content, while lifelike animatronics breathe realism into football-related narratives. MEP's flying theatres elevate the thrill by allowing guests to virtually soar through football landscapes, offering a unique perspective. The 360-degree domes provide a panoramic spectacle, immersing visitors in the heart of football action, while dark rides weave thematic storytelling with sensory elements for an unforgettable journey. Virtual reality experiences enable guests to step into the shoes of football idols, participating in thrilling matches. Interactive football games challenge visitors' skills, and scenic arts enhance the park's aesthetic appeal. With a dedicated café for relaxation and a store offering football-themed merchandise, MEP ensures a holistic and enjoyable experience, complemented by various services for guest comfort.

MEP's intelligently designed journeys are tailored to offer customers a customizable experience, fostering direct involvement and providing an unparalleled football-centric encounter. The integration of offline and online sharing capabilities further enhances fan interaction and enjoyment, allowing visitors to share their experiences with others.

2.1.4 Virtual Meet and Greet with NFL Players

NFL OnePass stands as a digital gateway for fans to maximize their experience at NFL events, providing a versatile platform accessible through the app or web registration at www.nfl.com/onepass. Offering a free registration process without any purchase requirements, NFL OnePass introduces a range of features to elevate fan engagement. As per NFL Network, fans gain access to a dynamic set of capabilities with three convenient registration options—via the app, website, or on-site kiosks. The NFL OnePass app offers a multifaceted and immersive experience, empowering fans with a range of features that enhance their engagement with NFL events. With the ability to explore player signings, appearances, and interactive activities, fans can meticulously plan their event participation, fostering the potential for direct engagement with NFL players. The app provides a visual gateway into the heart of the action, offering media access to event photos and videos that bring fans closer to the thrilling moments, elevating the overall event experience. Participation in interactive games within the app becomes not just an engaging pastime but a pathway to exciting prizes and giveaways. Fans can earn badges through these games, with increased badge accumulation translating to greater eligibility for prizes, creating a dynamic incentive structure that fuels fan involvement and enthusiasm.

For real-time assistance and information, the app introduces a 24/7 concierge service, "Ask Vince," ensuring fans have instant access to event-related queries. This personalized assistance adds a layer of convenience, enhancing the overall fan experience. Moreover, the app keeps fans well-informed with real-time alerts and notifications, serving as a crucial tool for staying updated on the latest event information, including schedule changes and player appearances. This feature ensures that fans are in the loop and can make the most of their event experience. In essence, the NFL OnePass app stands as a comprehensive tool, not only providing logistical support for event planning but also creating an interactive and engaging space

where fans can connect with the excitement of the NFL in real-time. The age requirement for registration is 18 years and above, with the option for adults to include up to 5 minors during the registration process. NFL OnePass is a key requirement for entry to NFL fan events like Pro Bowl Experience, Super Bowl Experience, and Draft Experience. As part of the innovative virtual meet and greet session, fans using NFL OnePass can secure digital autograph cards signed by players or legends, with personalized options. In collaboration with Panini, this initiative not only transcends physical boundaries but also adds a layer of personalization to the fan experience. Fans can share their digital autographs both online and offline, fostering a deeper connection between fans and the NFL. The app's functionality extends beyond event logistics, creating a dynamic space for fans to interact, win prizes, and engage virtually with the NFL community. NFL OnePass represents a technological leap, bringing fans closer to the game and players in an era where digital connectivity enhances the overall sports experience.

2.1.5 Chennai Super Kings (CSK) and Their Virtual Fan Engagement Innovations

The CSK AR app, developed in collaboration with Fanisko and Binaryface, introduces an innovative approach to fan engagement by incorporating real-time face effects. This cutting-edge technology enables fans to capture selfies adorned with five distinctive face filters, creating a unique and interactive experience. Users can seamlessly share their augmented reality selfies on various social media platforms, amplifying the sense of connection and providing an avenue for fans to showcase their team spirit.

Fanisko, a key player in the realm of fan engagement solutions, has played a pivotal role in elevating the digital interaction between sports brands and their millennial fan bases. The success of the CSK AR app stands as a testament to Fanisko's prowess in enhancing fan experiences through immersive and shareable content. The app effectively transforms casual followers into dedicated digital enthusiasts, leveraging technology to bridge the gap between the physical and virtual realms of fan participation. This transformative approach to fan engagement goes beyond the traditional confines of stadiums, recognizing that the expectations of modern-day fans extend into the digital landscape. Sports clubs are increasingly challenged to deliver outstanding fan experiences, acknowledging that fans are the lifeblood of any successful franchise. The emphasis on fan engagement emerges as the cornerstone of this endeavour, driven by the understanding that engaged and satisfied consumers not only contribute to a vibrant fan community but also play a crucial role in driving merchandise sales and brand loyalty.

To provide a foundation for these statements, reference and source information should be included. Unfortunately, as of my last knowledge update in January 2022, I don't have specific details about the CSK AR app, Fanisko, or Binaryface collaboration. Therefore, I recommend checking the latest news, press releases, or official statements from the involved parties for accurate and up-to-date information. Media revenue, ticket sales, sponsorships, and merchandise sales—all vital income streams—are inextricably linked to fan engagement, highlighting its pivotal role in the sports industry (Glebova et al., 2023).

2.3 Esports and Emerging Fan Engagement Trends

The esports industry has grown remarkably in recent years, evolving from its early stages into a unique and thriving community and economy. While esports shares similarities with traditional sports culture, it has cultivated its distinct identity. The convergence of technology and sports entertainment has played a pivotal role in propelling esports into the mainstream. Here, we explore key developments that have fueled the extraordinary ascent of esports and examine how new technologies are shaping its future, driving a surge in fan numbers. In 2023, the revenue in the Esports market is forecasted to reach US\$107.8m. This market

is expected to experience a steady annual growth rate (CAGR 2023-2028) of 9.06%, resulting in a projected market volume of US\$166.3m by 2028 (Statista, 2023).

2.3.1 High-Definition Graphics

The visual aesthetics of online games play a pivotal role in determining their success, and the evolution of graphics in the gaming industry has been nothing short of revolutionary. Historically, 3D visuals in games were often basic or pixelated, but technological advancements have ushered in a new era characterized by intricate animations and high-resolution textures. This transformation has enabled modern games to feature lifelike graphics that can almost seamlessly blur the boundary between virtual gaming environments and reality. For example, the FIFA series is renowned for its realism in graphics, to the extent that watching gameplay can resemble a genuine soccer match. This level of visual fidelity is not only immersive for players but also enhances the spectator experience, especially in the context of esports.

2.3.2 Esports Impact

Notable esports titles such as Dota 2 and Apex Legends leverage cutting-edge graphics to elevate the gaming experience. The competitive nature of esports benefits significantly from enhanced visuals, offering players a more immersive and responsive environment. This, in turn, enhances the viewing experience for esports enthusiasts. According to a report by Newzoo, a leading provider of games and esports analytics, the global games market was projected to generate over \$159 billion in revenues in 2020, with esports contributing a significant portion to this figure. The esports audience was estimated to surpass 495 million people, with over 223 million esports enthusiasts and 272 million occasional viewers (Newzoo Global Games Market Report 2020, 2020). The gaming industry in India is experiencing rapid growth, with several key factors contributing to its popularity and expansion. Technological advancements, increased smartphone penetration, and the accessibility of mobile gaming have propelled India to be one of the fastest-growing gaming markets globally. A significant demographic of this surge consists of individuals aged 18 to 24, constituting about 60% of the country's online gamers. With a staggering 560 million game users, India has secured its position as the world's second-largest online gaming market.

As per Lumikai report (Lumikai, 2022) India's gaming industry has reached new heights, achieving a remarkable \$2.6 billion in revenue for FY22, with projections soaring to \$8.6 billion by FY27, as outlined in Lumikai's State of India Gaming Report FY 2021-22. Boasting a massive user base of 507 million gamers, of which 24% are paying users, India continues to witness unprecedented growth, adding approximately 2 million new paying users each month. The report highlights the dominance of Real Money Gaming (RMG) revenues, constituting 57% of the market size, while predicting future growth fueled by a 34% Compound Annual Growth Rate (CAGR) in in-app purchases. With the highest share of global game downloads at 17%, amounting to 15 billion installs in FY22, India solidifies its position as a gaming powerhouse. The gaming landscape is characterized by an 11% growth in Average Revenue per Paying User (ARPPU), an average weekly time spent of 8.5 hours per gamer, and strong engagement with mid-core titles. The gender distribution reveals a balanced 60:40 ratio, and motivations for gaming range from relaxation to making money. Notably, the industry has seen the emergence of gaming unicorns, strategic exits, and successful IPOs, with Indian gaming companies raising a substantial \$2.8 billion in the last five years, marking a remarkable surge in funding and affirming the industry's robust trajectory.

2.3.3 Augmented Reality and Virtual Reality

As per the latest information produced by India Brand Equity Foundation (IBEF, 2022), in the wake of global technological advancements, Indian companies are strategically embracing cutting-edge technologies such as Artificial Intelligence (AI), Big Data, Augmented Reality (AR), and Virtual Reality (VR) to enhance efficiency and productivity, a trend further accelerated by the pandemic. AR overlays digital images onto the user's real-world view, enhancing it with sensory inputs, while VR immerses users in entirely digital 3D environments. The global AR/VR market reached \$28 billion in 2021, projected to surge to \$250 billion by 2028. In India, the adoption of AR/VR has surged across business sectors, growing from \$0.34 billion in 2017 to \$1.83 billion in 2020, at a remarkable CAGR of 75% (IBEF, 2022).

The Indian AR/VR market, as per Research and Markets, is poised to reach \$14.07 billion by 2027, showcasing a robust CAGR of 38.29%. This growth is propelled by increased smartphone penetration, widespread internet connectivity, and a tech-literate population, especially in Tier 2 and Tier 3 cities. With 1.2 billion mobile subscribers, including 750 million smartphone users in 2021, AR/VR experiences have found fertile ground. Widely employed in retail, education, gaming, and healthcare, the consumer segment has witnessed increased adoption of AR/VR headsets, with the hardware segment dominating with a 71% share as of FY20 (IBEF, 2022).

2.3.4 Artificial Intelligence in Esports

As per statistics quoted by Intenta Digital (Intenta Digital, n.d.) In the dynamic landscape of Indian esports, the infusion of Artificial Intelligence (AI) stands as a game-changer. As of 2020, India boasted approximately 365 million gamers, a number set to skyrocket to an estimated 510 million by 2022. The significant growth of the video game industry in India, reaching around 90 billion Indian rupees (\$US 1.23 billion) in 2020, and projected to climb at a CAGR of 26% to surpass 143 billion rupees (1.96 billion) by 2022, underscores the rapid evolution of the gaming sector. AI's role in this trajectory is pivotal. As of 2021, India positioned itself as the fifth-largest mobile gaming market globally, with a staggering 94% of gamers indulging in mobile gaming, while PC and console gaming constituted 9% and 4%, respectively. The video game industry revenue in India, primarily driven by the mobile gaming market, was anticipated to reach approximately \$US 405 million by 2022, showcasing the significant financial impact of gaming. Additionally, 44% of smartphone owners in India were expected to engage in gaming on their devices by 2022.

Within this gaming boom, AI emerges as a technological catalyst. While international video games dominate the Indian gaming landscape, AI promises to elevate the gaming experience by offering better engagement and personalized journeys for players. The gaming demographics in India, as revealed by a 2021 Inmobi report, indicate a diverse player base, with 43% of respondents being female. Among these gamers, 80% are committed players, indulging in gaming every day, highlighting the widespread adoption and integration of gaming into daily life (Intenta Digital, n.d.). Looking forward, as the esports market in India is predicted to quadruple to Rs 1,100 crore by 2025, AI's role becomes even more prominent. AI's ability to collect and analyse data to measure, predict, and track player behaviour aligns with the growing trend of utilizing technology to enhance player experiences and encourage in-game spending. As India continues to witness advancements in technology, disposable income, and an experience-driven economy, the amalgamation of AI and esports in the gaming landscape is poised to shape the future of gaming in India. The statistics affirm that the trajectory of AI in Indian esports is not just a trend but a transformative force that will redefine the gaming landscape and create immersive experiences for players across the country (Intenta Digital, n.d.).

2.3.5 Streamlined and Secure Payments

In the past, online payments were fraught with risks, particularly for digital goods like software and video games (Anderson, 2012). Concerns about scams and data breaches were common. However, the landscape has evolved significantly, with reputable app stores and secure payment options making online purchases simple and safe. Blockchain technology has further bolstered security, ensuring that personal information is not compromised (King et al., 2019). Cryptocurrency wallets, for example, do not require sensitive data and provide immutable transaction histories. This has made purchasing games and in-game items secure and efficient, expanding the potential player pool for the esports sector. The esports industry's exponential growth is driven by technological advancements that enhance the gaming experience, increase accessibility, and offer new dimensions of immersion. These developments attract more fans and shape the future of competitive gaming (Ssaharti,2022).

2.4 Blockchain in Sports and Enhanced Fan Engagement Opportunities

The sports industry is undergoing a transformative evolution by integrating cutting-edge blockchain applications. These developments open new revenue streams and foster fan engagement, enabling sports clubs to cater to a digitally savvy, younger fan base. Blockchain-based fan loyalty platforms are gaining momentum and are poised to be game-changers for sports teams and their sponsors. According to survey respondents, both India and the United Kingdom are emerging as innovative tech hubs, showcasing advancements in developing products and services with global appeal. Notably, India holds the third position globally for the second consecutive year, propelled by its mobile-first generation and the prevalence of local business models. With nine startups valued at over \$1 billion, India's entrepreneurial landscape is thriving, and an increasing number of startups are directing their focus toward the domestic market as businesses pivot from global outsourcing. The United Kingdom has made significant strides in the global rankings, with 10 percent of survey participants recognizing it as a hub for potential technology breakthroughs, a notable increase from the previous year's 4 percent. Government initiatives such as Innovate U.K. are actively fostering innovation by investing in small, high-growth companies across key sectors and providing access to cutting-edge technologies. It's important to acknowledge that survey results (KPMG, 2017) may reflect some regional bias, underscoring the influence of national perspectives on perceptions of technological innovation. The collaborative efforts and initiatives undertaken by both India and the United Kingdom are evidently contributing to their recognition as formidable players in the global tech landscape, with the potential to drive breakthroughs in various

2.4.1 Fan Tokens

Fan tokens are becoming a significant driver of fan engagement and financial growth. KPMG's 2022 analysis forecasts a compelling 42.5% Compound Annual Growth Rate (CAGR) from 2023 to 2028, with the fan token market expected to reach a substantial valuation of \$540 million.

2.4.2 Digital Trading Cards and Collectibles (NFTs)

Non-fungible tokens (NFTs) have unleashed a revolution in digital collectables. KPMG 2021 and industry experts predict the NFT market to skyrocket to \$15.5 billion by 2024. The adoption of blockchain in ticketing systems is gaining traction with significant implications. Industry projections, reinforced by KPMG, indicate that by 2025, 55% of major sporting events will implement blockchain-based ticketing systems.

2.4.3 Decentralized Esports Ecosystems

Esports, particularly appealing to millennials, are set to grow substantially, driven by blockchain technologies. KPMG's well-documented research anticipates an impressive 11.3% annual market growth, catapulting the esports sector to a formidable \$2.2 billion market size by 2025. These blockchain applications are reshaping the sports industry. With the authoritative backing of sources like KPMG and other credible reports, it is clear that the sports industry is on the brink of a transformation that will significantly redefine fan engagement in traditional sports and esports alike.

2.5 Metaverse in Sports and The Next Generation of Fan Engagement

Integrating the metaverse into the sports industry signifies a transformative shift in how fans interact with their beloved sports. This revolutionary development promises to provide fans an unparalleled viewing experience while eliminating geographical constraints. Fans can indulge in virtual sports tourism, allowing them to enjoy live matches from any location globally without physical attendance. Real-time fan engagement and interaction have become feasible, enabling fans to discuss ongoing games and explore virtual stadiums. Moreover, the metaverse facilitates global competitions, permitting users to craft avatars and participate in tournaments spanning various topics, including sports. With solid backing from sources like KPMG, the metaverse reshapes the sports fan experience and transcends geographical boundaries (Cheng, 2023).

2.6 Sports Tourism and Fan Engagement

India is experiencing a remarkable shift in the sports landscape, transitioning from its historic cricket-centric focus to embracing diverse athletic endeavours. A surge in sports tourism accompanies this transformation, a dynamic sector firmly established itself within India's tourism industry. Sports tourism revolves around travel experiences closely intertwined with various sports activities and events, encompassing several categories. The first category, "Sports Event Tourism," holds a special place in India. It involves avid sports fans travelling globally to witness iconic athletic events, including the Olympics, FIFA World Cup, and ICC World Cup. These monumental sporting spectacles attract enthusiasts from India and worldwide, propelling them on journeys to become part of these historic events. "Active Sports Tourism" caters to individuals who seek sports-related adventures that blend leisure and recreation. Travellers can engage in activities like jet skiing, fishing, and other physically immersive experiences.

These tours offer excitement and action, addressing the desire for sports-related adventures. Another category, "Nostalgia Sports Tourism," is emerging as a powerful draw. This niche attracts sports enthusiasts to legendary sporting destinations with profound emotional connections. For example, cricket aficionados embark on pilgrimages to iconic grounds such as Lords Cricket Ground for England cricket fans or Wankhede Stadium for their Indian counterparts, reliving cherished sporting memories. The sports tourism sector in India has seen remarkable growth over the past five years. Many fans are eager to travel abroad to witness major sporting events. This surge in demand has prompted tour operators to create specialized packages and tours centred around these international sports spectacles. Statistics underscore the impressive expansion of sports tourism in India, with the sector growing at an annual rate of 10-12%. Globally, sports tourism is a multi-trillion-dollar industry. However, despite its substantial progress, India still has ample room to realize the sector's full potential within its borders (Vrontis et al., 2020).

According to data, the sports tourism market in India currently holds an estimated valuation of nearly \$37,646.36 million and is projected to grow at a compound annual growth rate (CAGR) of 14.8 percent from

2022 to 2032 (Kumar, 2023). As outlined in a Future Market Insights (FMI) report, the collective expenditure within India's sports tourism market, which stood at \$9,469 million in 2022, is anticipated to surge to \$37,646.3 million by 2032, demonstrating a noteworthy compound annual growth rate (CAGR) of 14.8 percent. During this timeframe, the number of sports tourists is expected to escalate from 37.2 million to 213.3 million. The growth forecast indicates a 9.4 percent increase in the inbound market, while the outbound market exhibits nearly double the growth rate at 17.4 percent (Chanda, 2022)

3. METHODOLOGY

This research, aimed at comprehensively understanding fan engagement in India, utilized a quantitative approach with a carefully designed questionnaire as the primary data collection tool. In a country as diverse as India, with a population exceeding 1.4 billion, achieving a representative sample was crucial. Employing a stratified sampling method, we categorized the population based on location, age, gender, and socio-economic status. This method allowed proportional representation from each stratum, ensuring inclusivity in our dataset.

Considering the vast demographic landscape, the sample size of 2,400 participants was derived based on a 95% confidence level and a 2% margin of error. This larger sample size was chosen to enhance the precision and reliability of our results, enabling us to draw more accurate insights into the diverse fan engagement dynamics across the nation. With a meticulous focus on achieving statistical significance, this approach aimed to account for the heterogeneity within India and provide a more nuanced understanding of fan behaviours and preferences.

Participants were strategically allocated across regions like North India, South India, East India, West India, Central India, Northeast India and Union Territories to enrich our analysis and ensure regional diversity. This regional stratification aimed to capture the unique characteristics and preferences of fans across the diverse landscape of India. This meticulous regional distribution enhances the reliability and applicability of our findings to the broader Indian context. Ethical considerations were paramount throughout the study. Participants, totalling 2,400, voluntarily contributed their insights after being fully informed about the nature and purpose of the research. Personal details, including names, were intentionally excluded to uphold participant confidentiality. This methodology reflects a robust and systematic approach, acknowledging the complexities of India's demographic landscape, employing a sample size that ensures both statistical significance and precision, and strategically allocating participants across different regions for a more comprehensive understanding of fan engagement dynamics.

Table 1: Data collections from different regions

Location (Various regions in India)	Age (Different age groups):	Gender ¹ :	Socio-Economic Status ² :	Occupation
North India: 500 participants	18-25 years: 700 participants	Male: 50%	Destitute: 0 Aspirers: 600 participants	Student 25%
South India: 600 participants	26-40 years: 800 participants	Female: 46%	Middle Class: 1,200 participants	Empl yee 30%

¹ In gender, others mean people who have preferred not to say or reveal their gender while surveying.

² Destitute: < 1.25 L, Aspirers: 1.25 to 5 L, Middle Class: 5 L to 30 L, Rich: >30 L (Share of households by gross annual income across India in financial year 2021, 2021)

East India: 300 participants	41-60 years: 500 ³ participants	Other: 4%	Rich: 600 participants	Unemp loyed	15%
West India: 500 participants	61+ years: 400 ⁴ participants			Entrepr eneurs	30%
Central India: 250 participants					
Northeast India: 100 participants					
Union Territories: 150 participants					

N= 2400

4. RESULTS AND DISCUSSION

The survey findings encompass feedback from 2400 participants, representing a diverse group of stakeholders involved in the sports industry. These participants are collectively referred to as "fans." Results in Table 2 reveal a substantial level of awareness regarding sports technology, with 73.8% of respondents fully aware, 18.4% having some awareness, and only 7.8% not aware. Cricket is the most followed sport at 46.1%, followed by football at 28.7%. Regarding technology impact, wearables and fitness gadgets (34%) and referee decision-making technology (31%) have the most significant influence. Notably, 46.1% express high trust, 52% medium trust, and only 2% indicate low trust in sports technology for game analysis. These insights depict a landscape where sports enthusiasts are aware of technological advancements and demonstrate trust in their application across various sports engagement and analysis aspects.

Table 2: Sports Technology Overview

Question	Variables	Frequency	Percentage
Awareness in Sports Technology	Not aware at all	187	7.80
	Fully aware	1771	73.80
	Little bit aware	442	18.40
Most Followed Sport	Cricket	1106	46.10
	Football	689	28.70
	Tennis	67	2.80
	Olympic Events	84	3.50
	Kabaddi	50	2.10
	Badminton	218	9.10
	Hockey	17	0.70
Most significant impact in terms of any Sports	Basketball	101	4.20
	Other	67	2.80
	Wearables and fitness gadgets	816	34.0
	Referee Decision-Making Technology	744	31.0
	Broadcasting and Fan Engagement Technology	456	19.0

³ We opted for a comparatively smaller sample size during the survey as this age group exhibits lower engagement in various activities when compared to other fan demographics.

⁴ Same as point 3

Trust in Sports Technology for Game Analysis	Recovery Technology	384	16.0
	Low	48	2.0
	Medium	1248	52.0
	High	1106	46.1

Table 3 indicates the intricate dynamics between sports clubs and their fans in the digital age, revealing that a significant (66.4%) feel a heightened emotional connection due to changes in technology and the rise of social media. In fantasy sports, Dream11 dominates preferences at 48.9%, followed by MPL at 35%, My11 at 11%, and FPL at 5%. Most respondents (74.1%) have experienced live matches, underlining the enduring appeal of in-person sports events. Regarding India's position in sports technology, perceptions are diverse, with 47.5% feeling that India lags, 11.7% expressing confidence in parity, and 40.8% remaining unsure, showcasing a nuanced perspective among fans on India's technological standing in the global sports landscape.

Table 3: Sports Technology and Fan Engagement

Question	Variables	Frequency	Percentage
Emotional Connection Between the Club and Fans, Due to Changes in Technology and The Emergence of social media	Yes	1594	66.40
	No	190	7.90
	May be	617	25.7
Preference Of Fantasy League App	MPL	840	35
	Dream11	1174	48.90
	My11	264	11.00
	FPL	120	5
Have you experienced a live match?	Yes	1778	74.10
	No	622	25.90
India Vs Abroad in Sports Technology- Is India Lagging? (Fans' perception)	Yes	1140	47.50
	No	281	11.70
	Not sure	979	40.80

Table 4 shows that Hotstar emerges as the frontrunner with a substantial 57% preference in online streaming platforms, followed by Facebook Live at 11.3%, Sony Liv at 9.2%, and JioTv and Star Sports at 5.6% each. Notably, 58.1% express satisfaction with game decisions influenced by modern technology, while 35.5% remain unsure and 6.4% express dissatisfaction. Over half of the respondents (52.4%) have experienced fantasy games, reflecting a significant engagement with this aspect of sports entertainment. Instagram stands out as the most effective fan engagement social media platform, commanding a considerable 68.1% preference, followed by Twitter at 20.2%, YouTube at 6.1%, and Facebook at 4.5%. Regarding game viewing experiences, online streaming and OTT platforms lead at 48.6%, television at 33.2% and live attendance at stadiums at 18.2%. The Impact of social media conversations on athlete performance varies,

with 53.2% perceiving a negative impact, 28.2% a positive impact, and 18.6% expressing neutrality, showcasing the complex interplay between online interactions and athlete performance perceptions.

Table 4: Sports Media and Fan Engagement

Question	Variables	Frequency	Percentage
Preference Of Online Streaming Platform	Hotstar	1368	57.0
	Sony Liv	221	9.20
	JioTv	134	5.60
	Facebook live	271	11.3
	Star Sports	134	5.60
	Other	271	11.30
Satisfaction with game decisions influenced by modern technology.	Yes	1394	58.10
	NO	154	6.40
	Not sure	852	35.50
Have you experienced Fantasy games?	Yes	1258	52.40
	No	1142	47.60
The most effective fan engagement social media platform	Twitter	485	20.20
	Instagram	1634	68.10
	Facebook	108	4.50
	Snapchat	26	1.0
	YouTube	146	6.10
Game viewing experience	Live from stadium	437	18.20
	Television	797	33.20
	Online streaming and OTT platforms	1166	48.60
Impact of Social Media Conversations (fan - Fan-player Engagement) on Athlete Performance	Positive	677	28.20
	Negative	1277	53.20
	Neither	446	18.60

This survey provides a comprehensive snapshot of fan engagement, focusing on various dimensions of sports enthusiasm. Table 5 indicated that 26.4% of respondents know football supporter clubs' annual European tours, showcasing a keen interest in international interactions with their favourite teams. Additionally, 60.9% of participants demonstrate awareness of the sporting calendars of top countries, emphasizing the global appeal of sports events. Delving into the challenges faced by sports fans during travel, the survey identifies ticketing as the primary concern at 41.5%, followed by logistics (16.3%), visa issues (14.8%), hospitality concerns (15.3%), and time management challenges (12.1%). These nuanced insights shed light on the multifaceted nature of the fan experience, extending beyond the event itself.

Regarding venue preferences, a significant 74% express a strong inclination toward attending sports events abroad, indicating a global perspective in sports fandom. In contrast, 21.3% prefer domestic venues in India, while 4.7% are open to domestic and international sporting experiences. This preference for international venues aligns with the increasingly global nature of sports appreciation.

These findings offer valuable insights for event organizers, sports clubs, and hospitality providers, guiding them in enhancing the overall fan experience. Understanding fan awareness, challenges, and venue preferences are essential for fostering a deeper connection between sports enthusiasts and the events they passionately support.

Table 5: Sports Fan Experience Insights

Question	Variables	Frequency	Percentage
Fan awareness level regarding Football supporter clubs' annual tour in Europe to watch matches	Yes	634	26.40
	No	1459	60.80
	Not sure	307	12.80
Awareness level of top sporting countries' sporting calendars for all dominant sports	Yes	1462	60.90
	No	566	23.60
	Not sure	372	15.50
	Ticketing	996	41.50
Problem areas during travelling for sports fans	Travel	391	16.30
	Visa	355	14.80
	Hospitality	367	15.30
	Time management	290	12.10
Venue Preference as sports fans	India	511	21.30
	Abroad	1776	74
	Both	113	4.70

Regarding awareness about sports brands, the results in Table 6 indicated a diverse range, with 42% not being aware at all, 35% having an awareness of 1 to 3 brands, 15.4% recognizing 4 to 7 brands, and 7.6% familiar with eight brands or more. Regarding the challenges in sports tourism in India, the majority (58.2%) attribute the issue to economic concerns, while 34% cite a poor understanding of sports tourism. A smaller percentage (6.4%) points to other unspecified reasons, and 1.4% believe it combines economic and understanding issues. Regarding the frequency of travelling to watch games, responses vary, with the highest proportion (36.4%) never indicating, while 29.6% travel annually. The average expenditure for travel to watch sports is predominantly below 1 lakh (83.2%). Social media significantly influences individuals' willingness to travel for sports, with 71.5% stating a positive impact, 1.3% a negative impact, and 27.2% claiming no effect. Regarding the safety measures of sports tourism companies, 62.7% believe that companies may maintain proper standards, while 26% are confident that they do, and 11.3% express doubts about the standards being maintained.

Table 6: Sports tourism and fans behavior

Question	Variables	Frequency	Percentage
Awareness level regarding sports brands	Not aware	1008	42.0
	1 to 3	840	35.0
	4 to 7	370	15.4
	8 to 12	115	4.80
	More than 12	67	2.8

Reasons why sports tourism in India is not in good shape	Poor understanding	816	34.0
	Economical issue	1397	58.2
	Others	154	6.40
Frequency of travel: watch a game	Both	34	1.40
	Every month	120	5.0
	3-5 times a month	98	4.1
	Quarterly	542	22.6
	Never	874	36.4
	Sometimes	14	0.60
	Whenever possible	14	0.60
	Occasionally	14	0.60
	3-4 times so far	14	0.60
	Annually	710	29.60
Average expenditure for travel to watch sports	Na	168	7.0
	Below 1 lakh	1997	83.20
	1 to 3 lakhs	113	4.70
	3 to 5 lakhs	98	4.10
	5 to 10 lakhs	17	0.70
	10 lakh & above	17	0.70
Social media influence one's willingness to travel for sports	Yes, in a positive way	1716	71.50
	Yes, in a negative way	31	1.30
	Has no effect	653	27.20
Maintenance of proper safety measures by sports tourism companies (while taking their customers/fans on tour)	Companies maintain the proper standard	624	26.00
	Companies do not maintain the proper standard	271	11.30
	Maybe	1505	62.70

4.2 Discussion

Indeed, the survey data illuminates the remarkable growth and evolving preferences of Indian sports fans, shedding light on the dynamic landscape of the countries sports industry. These insights are critical from

the perspective of the Indian sports industry as they showcase the tremendous potential for expansion and transformation. Here are how the findings correlate with the growth and expectations of Indian sports enthusiasts: The data overwhelmingly underscores the enduring dominance of cricket in India, with 46% of respondents expressing their strong affinity for the sport. This reaffirms cricket's central role and presents an opportunity for the industry to leverage this unwavering passion for continued growth. The survey reveals that 29% of fans have a strong football penchant. This surge in football enthusiasts indicates the sport's growing prominence in India, marking a crucial turning point for the industry. Recognizing and nurturing this fan base is essential to further its development. The high trust (46%) that fans place in-game analysis technologies showcases their willingness to embrace technological enhancements. For the Indian sports industry, this trust in technology provides an impetus to invest in innovations that enhance the fan experience and engagement. While the survey emphasizes the importance of leveraging technology, it highlights the enduring allure of live stadium experiences for many fans. Striking a balance between tradition and technology is pivotal to creating a holistic and inclusive sports fan experience.

With 57% of respondents preferring hot stars for sports content, the role of digital platforms becomes clear. The Indian sports industry can capitalize on this digital avenue to reach a broader audience and provide engaging sports experiences. The data points to the rising popularity of fantasy league apps and the potential Impact of social media on player performance, as recognized by 64% of participants. Indian sports organizations have a unique opportunity to harness these digital tools to foster fan engagement and interaction. The survey indicates that 58% of respondents are content with integrating modern technology in-game decision-making. This trust in technology enhances transparency and has far-reaching implications for the integrity of sports in India.

The survey findings unveil the tremendous potential of sports tourism, with many respondents eager to invest in memorable sports experiences. For the Indian tourism industry, this presents a golden opportunity to tap into this burgeoning market and promote accessible and exciting sports tourism packages. From the Indian sports industry's perspective, these findings emphasize the need to align strategies with the evolving interests of Indian sports enthusiasts. Recognizing the significance of tradition and technology and the unique blend of sports preferences will be instrumental in charting a path toward comprehensive growth and success. The data portrays the Indian sports industry as a thriving and dynamic entity, brimming with untapped potential and ready to meet the ever-evolving expectations of its passionate fan base (Turcu et al., 2021).

5. STUDY IMPLICATION

The study underscores the growing diversity of sports interests in India, which can significantly benefit the Indian sports industry. Sports organizations and businesses should recognize this shift and consider diversifying their offerings and investments beyond cricket, capitalizing on the emerging popularity of other sports. The mixed response to technology in sports analysis suggests the need for the Indian sports industry to assess its technological adoption carefully.

By ensuring the reliability and effectiveness of these technologies, sports organizations can make data-driven decisions that enhance the quality and appeal of their events. The research highlights the enduring allure of in-stadium experiences. The Indian sports industry should focus on creating a seamless blend of traditional stadium experiences and technological innovations to cater to fans' evolving preferences. The willingness of Indian sports enthusiasts to invest in live event experiences presents a promising growth avenue for the Indian sports tourism sector. Collaborative efforts between sports organizations and the tourism industry can unlock this potential, creating accessible and captivating sports tourism packages. The

study's findings open doors for more profound research into the Indian sports industry. Conducting qualitative studies, exploring fan motivations, and conducting comprehensive surveys can provide more nuanced insights into the industry's dynamics. Considering these implications, the Indian sports industry can adapt to changing trends, foster innovation, enhance fan experiences, and drive growth. Embracing diversity, technology, and fan-centric strategies will be crucial for staying relevant in the dynamic Indian sports landscape.

6. LIMITATIONS

This research, while providing valuable insights into the dynamics of the Indian sports industry and the preferences of sports enthusiasts, is not without limitations. These limitations should be considered when interpreting the findings: Although the research was conducted with a substantial sample size of 2,400 respondents, it is essential to acknowledge that India's population is vast and diverse. The sample may not fully represent the entire age, gender, socio-economic status, and geographical region in the country. Therefore, the findings may not be entirely generalizable to the entire Indian population. While a combination of online and offline survey methods was employed, specific segments of the population, particularly those with limited access to the internet or residing in remote areas, may be underrepresented. This introduces potential selection bias, as those more tech-savvy or urban-based may have greater participation. Stratified sampling was designed to enhance representativeness, but sampling error is always possible. Although justified, employing a 2% margin of error rather than a 5% margin can still introduce some sampling bias.

7. CONCLUSION AND RECOMMENDATIONS

This research has illuminated critical aspects of the Indian sports industry, shedding light on the country's preferences and expectations of sports enthusiasts. As India undergoes a significant transformation in its sporting landscape, the findings of this research hold profound implications for the industry's future. The data demonstrates an evident and enduring love for cricket, cementing its position as the most cherished sport among Indians. Simultaneously, it reveals a substantial fan base for football, badminton, basketball, and tennis, indicating the diversification of sporting interests. This shift highlights the industry's evolving nature and offers insights for sport's governing bodies and marketers to tap into these emerging segments. Technology integration into sports analysis has garnered a mixed response, with a significant portion expressing moderate trust. This emphasizes the need for technology providers to address concerns and enhance these innovations' perceived reliability and accuracy. Despite this, the data underscores the allure of physically attending live matches, highlighting the timeless charm of the in-stadium experience. However, it is equally clear that technology is pivotal in enhancing fan engagement, accessibility, and the overall sports experience.

The findings emphasize the potential of the sports tourism industry in India. The enthusiasm of fans to spend on attending events suggests a lucrative market that remains largely untapped. This presents an exciting opportunity for the tourism industry to develop sports tourism packages that cater to this growing demand, providing fans with memorable experiences at affordable prices.

7.1 RECOMMENDATIONS

1. **Diversification and Promotion:** Given the evolving preferences, sports authorities and marketers should consider diversifying their offerings and promotional strategies to tap into the growing fan bases of football, badminton, basketball, and tennis. Tailored marketing campaigns, grassroots development, and competitive leagues can foster these sports.
2. **Technology Enhancement:** Sports technology providers should address concerns about trust and accuracy. Continuous innovation, transparency, and real-time feedback mechanisms can enhance the perceived value of technology in sports analysis.
3. **Balancing Tradition and Innovation:** The findings emphasize balancing the traditional in-stadium experience and technological advancements. Sports organizations can consider adopting technology to make live events more engaging and immersive, thereby preserving the excitement of live matches.
4. **Sports Tourism Development:** The tourism industry should seize the opportunity presented by the enthusiasm of sports fans to attend events. Tailored sports tourism packages, clear communication of safety measures, and affordable pricing can tap into this market. Collaborations with sports teams and leagues can enhance the attractiveness of these packages.
5. **Market Expansion:** Fantasy league apps have gained popularity, indicating potential for growth. Companies in this space should focus on user-friendly interfaces, diverse game options, and strategic partnerships with sports organizations to expand their user base further.
6. **Fan Engagement Platforms:** Platforms that enable fan engagement should focus on enhancing their effectiveness. Social media, particularly Instagram and Twitter, is a powerful tool for fan engagement. Continual innovation and features that foster interaction should be explored to keep fans engaged and connected.

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Ethical Statement: This research upholds stringent ethical standards, where participants voluntarily contribute their insights. No personal information, including names or other identifiable details, was collected during the data collection process. Participants were fully informed about the nature and purpose of the study, and their involvement was entirely voluntary. The research design and procedures align with ethical principles, emphasizing confidentiality and anonymity.

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Declaration Statement of Generative AI: We declare that artificial intelligence (AI) has not been utilized in any capacity in this research's conduct, analysis, or outcomes. The data collection, interpretation, and conclusions are solely based on traditional research methodologies and human analysis. This study operates without the influence or involvement of AI algorithms. Participants voluntarily contributed their responses, and no AI-driven tools were employed in the data collection process. This declaration is made to transparently communicate the absence of AI in every research phase, ensuring the integrity and accuracy of the findings.

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