

DIGITAL TRANSFORMATION'S IMPACT ON THE SPORTS TOURISM INDUSTRY: OPPORTUNITIES AND CHALLENGES

Lin Chien-Yu⁽¹⁾; Nguyen Van Bac⁽²⁾; Lin Wen-Long⁽³⁾

Summary

The sports tourism industry is undergoing major changes through digital transformation. Technologies like Virtual Reality (VR), Augmented Reality (AR), Big Data, Artificial Intelligence (AI), and blockchain are enhancing audience experiences, expanding markets, and creating new engagement opportunities. Emerging technologies such as NFTs provide innovative revenue streams for event organizers.

Despite these benefits, challenges persist, including high technology costs, data privacy concerns, and difficulties for traditional audiences to adapt. Smaller organizations face financial barriers, while data breaches and system failures pose risks to event reputations and operations.

This study uses literature review, case studies, and data analysis to explore the applications of digital technologies, strategies to overcome challenges, and their global impact. Findings show that digital transformation enhances audience experience, operational efficiency, and revenue innovation, offering actionable strategies for sustainable growth.

Keywords: Sports Tourism, Digital Transformation, NFTs, Innovative Technologies.

Introduction:

Sports tourism combines sports activities with travel, catering to travelers who participate in, watch, or experience sports events ranging from amateur to professional levels (Hinch & Higham, 2001). It is categorized into event tourism, active tourism, and heritage tourism (Gibson, 1998).

As one of the world's leading economic drivers, the sports tourism industry continues to expand. In 2020, the global market was valued at USD 483.8 billion, projected to reach USD 1.8 trillion by 2030, with a 7.6% annual growth rate (Allied Market Research, 2021). Asia, driven by sports events in countries such as Taiwan, China, Japan, and South Korea, is experiencing rapid growth (Wu et al., 2019).

Digital transformation is reshaping the industry, leveraging technologies like VR, AR, Big Data, AI, and blockchain to enhance spectator experiences and optimize operations (Pizzo et al., 2020; Yang et al., 2021). VR and AR enable immersive and interactive experiences, while AI and Big Data empower event organizers with data-driven decision-

making. Blockchain and NFTs open innovative revenue streams through digital collectibles (Alam et al., 2022).

Despite these advancements, challenges persist. High costs hinder smaller organizations, and issues of data privacy and security threaten consumer trust (Smith & Stewart, 2020). Additionally, older audiences may resist digital innovations, while technical disruptions risk damaging brand reputation (Li et al., 2020).

International trends, social dynamics, and government policies also influence digital transformation. Globalization and digital technologies drive international standardization and engagement (Ratten, 2021). Rising health consciousness and digital lifestyles boost markets like virtual fitness, while supportive policies foster innovation (State Council of China, 2021). Universities play a critical role in developing talent through interdisciplinary education and industry collaboration (Yang et al., 2021).

Studying the digital transformation of sports tourism reveals how technology drives growth, offering insights and strategies for sustainable

⁽¹⁾Teacher, National Taiwan University of Science and Technology

⁽²⁾PhD, ⁽³⁾Prof.PhD, National Taiwan University of Sport

development in the digital era. This research explores technological applications, challenges, global trends, societal dynamics, policy support, and talent cultivation to chart a path for the industry's future.

Opportunities

1. Enhancing Audience Experience: Virtual Reality (VR) and Augmented Reality (AR)

VR and AR technologies create new immersive experiences in sports tourism, such as virtual seat selection and 360-degree panoramic views. Pizzo et al. (2020) emphasized that these technologies allow viewers to watch events from different perspectives, such as selecting a virtual seat through VR, giving them the feel of being at the event. AR can overlay real-time digital content on live events, such as real-time stats, match information, and player statuses, enhancing viewer interaction (Ratten, 2021).

2. Expanding Market and Audience: Online Streaming and Digital Platforms

Online streaming has broken the geographical and time constraints of sports events, reaching a global audience. Molla and Nelson (2021a) mentioned that during the pandemic, sports event live streams on platforms like YouTube and Twitch surged, showing that even when physical participation is limited, digital platforms can maintain audience enthusiasm.

3. Data-Driven Decisions: Big Data and Artificial Intelligence (AI)

Big Data can collect and analyze massive amounts of audience behavior and match data to improve event operations, such as viewing times, interest preferences, and interactive behaviors, helping organizers optimize marketing strategies and viewer experiences. AI technology is widely used in real-time data analysis, personalized recommendations, and intelligent customer service (Yang et al., 2021).

4. New Revenue Streams: Digital Tickets and NFTs

NFT technology has created entirely new revenue models for the sports tourism industry. Alam et al. (2022) pointed out that with blockchain technology, sports events can sell

digital collectibles such as digital tickets, match highlights, and player cards, whose rarity and uniqueness make them highly valuable in the market.

5. Blockchain and NFTs

Blockchain technology is applied in ticketing systems to prevent counterfeit tickets and fraud, ensuring consumer rights. NFT technology creates a new digital goods market, such as selling digital memorabilia and exclusive athlete content, bringing new revenue sources to sports tourism (Alam et al., 2022).

Challenges

1. High Technology Costs: Technology Investment

Smith & Stewart (2020) pointed out that small and medium-sized sports organizations face financial constraints during digital transformation. Implementing digital technologies requires significant investment, including developing new platforms, maintaining systems, and purchasing hardware, which places financial pressure on organizations with limited resources.

2. Data Privacy and Security Concerns: Data Protection

Increased data collection in sports events has heightened the risk of privacy breaches. Brown et al. (2021) emphasized that as data-driven decisions become more prevalent, sports event organizers need stricter data protection measures to prevent leaks and misuse. For instance, the Tokyo 2021 Olympics' app faced criticism for insufficient data privacy protection.

3. Risk of Losing Traditional Audiences: Digital Divide

Digital transformation may alienate some traditional audiences, especially older demographics. Dwyer et al. (2021) stressed that digital tickets and online interactions could become barriers for audiences unfamiliar with or unwilling to adopt new technologies.

4. Risks of Technology Dependence: System Stability and Reliability:

Li et al. (2020) highlighted that the digital operation of sports events depends heavily on the stability of technology. Any system failure could negatively impact both the event and the

audience experience. Technical disruptions or cyber-attacks could lead to event cancellations, harming the event's credibility.

Discussion

Digital transformation in the sports tourism industry is shaped by technological advancements and broader factors like international trends, social dynamics, national policies, and university talent training. Key influences include:

1. International Trends

Globalization and Digital Technology Adoption:

The increasing use of global digital platforms drives live sports streaming and cross-border fan interaction. Events like the Olympics and World Cup leverage digital tools to reach global audiences and attract sponsors (Statista, 2022).

Impact: Enhanced global networks and data analytics will solidify the industry's international presence (Ratten, 2021).

2. Social Dynamics

Health and Digital Lifestyles:

Rising interest in health has spurred demand for digital fitness and virtual sports. Over 70% of young people are open to these products, signaling their potential as tourism offerings (GWI, 2021).

Impact: The industry must diversify into digital fitness and E-sports to meet evolving consumer preferences (Hudson & Hudson, 2021).

Social Media Influence:

Social media is essential for promotion and fan engagement. Influencer marketing and real-time interactions expand brand influence, with 60% of sports fans engaging via these platforms (Molla & Nelson, 2021).

3. National Policies

Digital Economy and Smart Cities:

Policies supporting smart cities and digital infrastructure, like China's 14th Five-Year Plan, provide funding and technical support for event digitalization (State Council of China, 2021).

Impact: Investments in 5G networks and smart stadiums accelerate digital transformation.

Data Protection Regulations:

Stricter privacy laws, like the EU's GDPR, require compliance, increasing operational costs but enhancing consumer trust (Brown et al., 2021).

4. University Talent Training

Interdisciplinary Education:

Curricula combining sports management with digital technology and analytics are essential to meet industry needs (Yang et al., 2021).

Impact: Collaboration with industry through internships and research helps students adapt to evolving demands.

Digital and Innovation Skills:

Programs focusing on digital tools and innovation labs prepare students to drive industry advancements (Ratten, 2021).

Impact: These efforts enhance the industry's overall capacity for innovation.

In summary, digital transformation is reshaping sports tourism through global collaboration, health-oriented innovation, supportive policies, and skilled talent development. Embracing these trends is vital for sustainable growth.

Conclusion and Recommendations

Conclusion

Digital transformation is reshaping the sports tourism industry, creating opportunities to enhance audience experiences, expand markets, and develop innovative revenue models. However, challenges such as high technology costs, data privacy concerns, and potential audience loss must be addressed. The industry's evolution is shaped by global trends, social dynamics, supportive policies, and university talent cultivation. To ensure sustainable growth, the industry must embrace continuous innovation while balancing digital advancements with traditional experiences.

Recommendations

- *Promote Technology Adoption:* Educate and train diverse audiences, including older generations, to bridge the digital divide and increase technology accessibility.

- *Strengthen Data Security:* Invest in advanced data protection and ensure compliance with regulations to maintain trust and safeguard audience privacy.

- *Foster Cross-Sector Collaboration*: Partner with tech firms, financial institutions, and other industries to drive innovation and explore new business models like NFTs and blockchain.

- *Enhance System Stability*: Develop robust digital infrastructure and emergency management plans to handle technical disruptions and cyber-attacks, ensuring smooth event operations and audience satisfaction.

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Main responsible: Lin Wen-Long
Email: marklintw@yahoo.com.tw)