



Research on the Management System Innovation of Professional Sports Clubs

-Based on the Integrated Perspective of Brand Value and Digital Transformation

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Abstract. In the context of the deepening commercialization of the global professional sports industry, professional sports clubs are faced with multiple challenges such as intensifying competition, diversified user demands and technological changes. The traditional management system has been unable to adapt to the collaborative development needs of brand value enhancement and digital transformation. Based on the integrated perspective of brand value and digital transformation, this study explores the theoretical logic and practical path of professional sports club management system innovation. It is found that digital transformation provides technical empowerment for the cultivation and value-added of brand value through data-driven user insight and scenario-oriented brand infection. The increase in brand value feeds back digital transformation, through emotional connection and strengthening user engagement, expanding business development space. Based on this, the paper constructs a five-dimension innovation framework of "background - hypothesis - practice - analysis - summary". The study further pointed out that in the process of digital transformation, the risk of "digital island" and "brand hollowing out" should be vigilant about. This study provides a theoretical reference for professional sports clubs to cope with the competition in the digital age and provides a practical case study enlightenment for the collaborative path of management innovation and value enhancement under the high-efficiency development of the sports industry. It is found that the integration of brand value and digital transformation can effectively promote the innovation of clubs in the aspects of event operation, commercial development, fan management, etc., and improve management efficiency and market influence.

Keywords: Professional Sports Clubs, Management System Innovation, Brand Value, Digital Transformation.

1 Introduction

1.1 Research Background and Research Theme

In this study, under the background of globalization and commercialization, sports clubs have changed from a single competitive entity to a comprehensive commercial organization, which needs to balance competition. Under the background of rapid development of global digital economy, traditional clubs face multiple challenges and opportunities.

Taking professional sports clubs as the research object, this paper explores the innovation path of management system, explores and integrates the practical results of digital transformation, optimizes the club in terms of operation, business and management, and finally realizes the competitiveness improvement and sustainable development of the club.

1.2 Research Purpose and Significance

This study will analyze the shortcomings of the existing management system (capital, manpower, culture, etc.), tap the potential of brand value in business, enhance user experience through digital transformation (virtual court, real-time data, etc.), and finally build an efficient management system that is more suitable for the development of The Times.

On this basis, it provides a perfect construction of brand value in the digital age, finds out the impact of digital transformation on brand value in view of the unique ecological development of professional sports clubs, and reconstructs the generation logic of brand value (from the traditional "influence of events" to "cultural connotation and heritage of fan teams").

1.3 Research Methods and Framework

This study adopts literature review method, case study method (Manchester City Football Club), interdisciplinary research method (disciplinary integration - Sports management, brand Management: Information Management (digital transformation theory), and economics.

From the construction of basic theory to empirical analysis, this study summarizes pain points and puts forward countermeasures. Finally, it summarizes and puts forward practical suggestions from the perspective of integration.

2 Literature Review

2.1 The Concept and Application of Digital Transformation

Against the backdrop of digital economy development, digital transformation has become a crucial path for professional sports clubs to achieve management upgrades and

gain competitive advantages. Liu Changli argue that digital transformation not only signifies technological innovation but also entails profound changes in production methods, consumption patterns, and organizational forms [1]. Based on the TOE (Technology–Organization–Environment) framework, digital transformation in the sports industry is manifested through improvements in supply quality, innovations in consumption models, and the reshaping of organizational capabilities.

In the management practices of sports clubs, digital technologies are widely applied in areas such as match data analysis, optimization of player development systems, intelligent ticketing systems, and fan community operations. Big data and artificial intelligence assist in decision-making, enabling coaching teams and management to formulate tactical strategies with greater precision. Social media and mobile application platforms directly connect with fans, deepening user engagement and fostering brand loyalty. Qingwei Song and Wei Tang point out that enterprises face three major challenges in digital transformation: funding, technology, and talent, with the talent factor being particularly critical [2]. Vocational education thus becomes an important avenue for cultivating digital skills.

Currently, sports clubs encounter issues such as insufficient infrastructure, lagging management awareness, and inadequate policy support during their digital transformation processes. Liu Changli propose strengthening the construction of digital infrastructure, stimulating endogenous motivation for transformation, and improving relevant legal mechanisms to safeguard the transformation process.

Digital transformation has become key to enhancing the management level and competitiveness of professional sports clubs. Literature indicates that, beyond technical applications, clubs need to cultivate digital awareness and systems thinking within their organizations. Big data and artificial intelligence are profoundly influencing event management, player development, and fan interaction. Digitalization is not merely a tool, but a process of reshaping operational logic. Currently, shortcomings in infrastructure, talent reserves, and financial support remain. Clubs should develop phased transformation plans according to their specific conditions, steadily advance the digital upgrade of their management systems, create distinctive digital competitive advantages, and enhance their capacity for sustainable development.

2.2 The Meaning and Practice of Brand Value

Brand value holds a central position in the operation of professional sports clubs, resulting from the combined effects of athletic performance, cultural identity, and commercial development. Liu Menggen points out that the enhancement of club brand value relies on competitive achievements, global expansion, digital transformation, and the creation of a consistent brand image [3].

In practice, excellent brand building stems from the long-term accumulation of stable competitive performance, the shaping of deep cultural traditions, and the fulfillment of social responsibilities. Kwon Jeong-il and Kim Wook, through a structural equation modeling study, found that the fulfillment of social responsibilities by professional sports clubs can significantly strengthen brand personality and enhance fan loyalty [4]. Professional clubs, through initiatives such as public welfare activities, environmental

protection, and community service, enhance public recognition and form differentiated competitive advantages.

Using Korean professional clubs as a case study, Wang Sung Myung identified three types of ESG management values: trust management, emphasis on local communities, and a culture of safety and respect [5]. This research highlights that although consumer awareness of environmental responsibility remains relatively low, social responsibility and governance capabilities have become indispensable components of the brand value system.

The construction of brand value depends on the combined effects of athletic performance, cultural dissemination, fulfillment of social responsibilities, and fan engagement. Literature cases demonstrate that the development of local star players, participation in public welfare projects, and the use of short video and social media communication have become important paths to enhancing brand recognition. Brand value reflects not only athletic strength but also extends the club's cultural and social influence. In the digital era, the pace of brand communication has accelerated, and the scope of brand influence has expanded. Clubs should continuously deepen emotional connections with fans, actively practice social responsibility, and integrate precise communication strategies to shape a distinctive and sustainably attractive brand image, thereby promoting the long-term growth of brand equity.

2.3 Literature Review on Club Management

Research on the management systems of professional sports clubs has continued to deepen, with the focus shifting from traditional performance-oriented approaches to comprehensive governance and diversified value creation. Xie Hantang argues that new media technologies have endowed clubs with greater discursive power and the ability to shape their public image, with social media becoming a core platform for building a multidimensional media presence for clubs [6].

Li Zi'ao and Wang Yibei, based on a SWOT analysis, point out that sports clubs need to fully leverage their internal mechanisms while adapting to the trend of diversified consumer demands [7]. By optimizing development directions and operational models, clubs can enhance their market competitiveness. Their study emphasizes the strong correlation between management innovation and the satisfaction of consumer needs.

Hu Yaxin and Jia Wentong highlight that the nature of corporate social responsibility (CSR) in professional sports clubs is primarily reflected as moral responsibility, encompassing areas such as public welfare, education, culture, and environmental protection, distinguishing it from economic and legal responsibilities [8]. This understanding helps to clarify the importance of social responsibility positioning in club management.

From an international comparative perspective, François Aurélien and Bayle Emmanuel [9], through case studies of French professional sports clubs, propose that incorporating CSR into the club governance structure helps to enhance stakeholder engagement and promotes the modernization of club governance.

The innovation of management systems in professional sports clubs reflects a transformation from a competition-oriented to a comprehensive value-oriented approach. Research indicates that a scientific governance structure, agile operational mechanisms,

and clear positioning of social responsibility are the core elements of modern club management. Digital technologies have driven organizational flattening and intelligent decision-making processes. Management systems must closely align with fan demands, strengthen the practice of social responsibility, and enhance overall operational resilience and efficiency. Clubs should dynamically optimize their management models according to their developmental stages and changes in the market environment, promoting the coordinated advancement of athletic performance, brand value, and social influence, thereby building an organizational system with long-term competitiveness.

3 Case study: the Digital Transformation Practice of "Manchester City Football Club"

3.1 Case Background

Manchester City Football Club, a Premier League powerhouse, was bought by an ABU Dhabi consortium in 2008. At the athletic level: the team won eight Premier League titles in the past decade and achieved a historic breakthrough of the "triple Crown" of Champions League, Premier League and FA Cup in 2023. In the commercial field: its 2023-24 season revenue reached 715 million pounds, commercial revenue accounted for 47%, brand value of 1.51 billion euros jumped to the world's first football club [10]. However, faced with the challenges of increasing competition in the Premier League and the diversification of fans' needs, Manchester City has promoted digital transformation since 2017 to improve operational efficiency through technology, meet the diversified needs of fans, and explore new commercial developments.

3.2 Methods and Paths of Digital Transformation

3.2.1 Upgrade of Technical Infrastructure. Manchester City introduces SAP Analytics Cloud to build a data center, integrating multidimensional data such as player performance, fan behavior, and business operations to achieve real-time sharing across departments

3.2.2 Fan Experience Reconstruction. Cooperated with SONY to develop the "Favorite Space" application, which realizes multi-angle replay of game highlights through eagle vision tracking technology, so that fans can switch between "bird's eye view" or "player's view" to watch goal details.

3.2.3 Team Management Intelligence. AI injury prediction system: Collect players' biomechanical data (such as muscle fatigue and joint pressure) through wearable devices and combine historical injury records with training AI models to predict potential injury risks.

3.2.4 Construction of Virtual Stadium. The virtual Etihad Stadium, built in partnership with SONY, simulates different weather and spectator atmospheres for tactical drills and fan experiences

3.3 Results of Digital Transformation

3.3.1 Reconstruction of the Fan Ecosystem. Manchester City's live broadcast of the Champions League match in partnership with Amazon Prime Video attracted more than 4 million viewers, setting a record. The platform provides functions such as multi-angle screen switching and real-time data overlay through AI technology to enhance immersive experience.

3.3.2 Revenue Breakthrough. In the 2024-2025 season, Manchester City's total revenue reached 854 million euros (second in Europe), with a significant increase in the proportion of digital-related revenue. The official game "Legend of Manchester City" in partnership with Zeroland Digital Sports exceeded 50 million downloads and generated £42 million in revenue in a single quarter, accounting for 28% of commercial revenue

3.3.3 Technology-Driven Fan Operations. Manchester City has expanded its global fan community to 80 million through digital means such as WeChat mini programs and social media interactions. The live broadcast of the Champions League in cooperation with Amazon Prime Video attracted more than 4 million viewers, and the platform provided functions such as multi-angle screen switching and real-time data superposition through AI technology to enhance the immersive experience. Etihad Stadium's Wait Time Crowd Intelligence system optimizes service efficiency by analyzing crowd density in real time, reducing fan queue time by 30%.

3.3.4 Sustainable Energy. In cooperation with Jinko solar, the City Football Academy has installed 10,500 photovoltaic modules covering the roof of the youth training facility and is expected to achieve 100% self-sufficiency in power generation by the end of 2024, with the remaining power to support the surrounding community. The project makes Manchester City the first "renewable energy station" in international football and plans to add thousands of new ground-based photovoltaic modules by the end of the 2025 season to further enhance the clean energy supply capacity.

3.4 Success Factors of Manchester City's Transformation

The main reason is the top-level thinking of long-term planning, Manchester City's transformation is not short-term speculation, but the result of the ABU Dhabi consortium's continuous investment since the acquisition in 2008. By establishing the "City Football Group" (CFG), Manchester City has incorporated technological innovation into the group's strategy, forming a collaborative ecology of "football - technology -

City". For example, the "meta-universe three-year Plan" launched in 2024 clearly proposes goals such as virtual venues and digital human commercialization, which will advance in tandem with the club's competitive goals (such as winning the Champions League).

The second is the three-dimensional linkage of politics, business and research. The City Sports Data Platform, a collaboration between Manchester City Football Club and Manchester City Council, integrates data on the number of people at events, public transport and energy consumption, and optimizes tram lines to reduce fans' commuting time by 15%

With the technical support of global partners like Sony-Meta comes, digital twin modeling technology increases immersion in virtual venues by 30%. Jinko solar - PV, customized PV modules are 18% more efficient than the industry average.

Finally, the forward-looking training of technical talents, Manchester City and the University of Manchester to open a "digital football" master program, training cross-field talents. At the same time, the internal "technical rotation plan" is set up to allow employees in traditional positions (such as Marketing Department and youth training Department) to participate in technical projects and improve the overall digital capability.

4 Analysis of Pain Points in the Digital Transformation Process of Professional Sports Clubs

4.1 Pain Point 1: The Transition is too Vague

The ambiguity of transformation is reflected in the contradiction between long-term investment and short-term return: small and medium-sized clubs in the Premier League (such as Nottingham Forest), due to excessive reliance on broadcast rights income, digital investment only accounts for 3%-5% of revenue, far lower than Manchester City's 15%-20%. Tottenham had invested in a VR training system - costing £12 million - leading to short-term financial losses, raising questions from shareholders.

Then there is the blind follow the trend of the technical route, AC Milan in 2023 blindly follow the NFT boom, the release of the star digital collection due to copyright disputes and market saturation, sales only reached 17% of the expected, forced to terminate the cooperation

4.2 Pain Point 2: Data Cannot be Utilized as a Whole and Becomes a Data Island

Cross-departmental data barriers, such as Manchester United's youth training camp and first-team training data have long been separated, until the introduction of a unified AI analysis platform in 2024, it was found that 37% of the strength training program of youth players is unreasonable

4.3 Pain Point 3: High Cost of Technology Integration

To integrate the Metacom platform with the existing official website, Bayern Munich spent an additional 25 million euros to restructure the system, which took 18 months to complete the data interchange

4.4 Pain Point 4: Organizational Rigidity and Talent Fault

The Real Madrid board rejected the digital twin pitch proposal, arguing that "virtual experience cannot replace real watching", resulting in its meta-universe layout behind Manchester City by three years. At the same time, the problem of talent gap accounted for a large proportion of the survey, 89% of the top five European league clubs lack senior executives with AI and blockchain technology background and rely on external consultants for technical decisions.

5 Suggestions for Efficient Digital Transformation of Professional Sports Clubs

5.1 Organizational Restructuring - from "Traditional Management" to "Digital Spin-off"

The digitalization of the talent system can be upgraded within the club, like the participation of traditional employees in technical projects; External talent introduction; Recruit AI trainers, etc. And under the operation mode of school-enterprise cooperation, it aims to cultivate cross-field talents

5.2 Scenario-based Disassembly of Strategic Objectives

In the initial stage, the club can achieve cross-system data interoperability through API integration, improving the accuracy of fan portraits by more than 85%. In the medium term, the club can be promoted and gradually transformed into a "digital twin", covering the full process simulation of training, competition and business, such as Bayern Munich's virtual tactical simulation system, which improves training efficiency by 22%. In the later stage, the club has gradually transformed and matured, and it is necessary to build a "sports science and technology ecological platform", such as Manchester City's City Football Group, which integrates the data of eight clubs in the world to form technology output capabilities.

5.3 Technical Protection of Data Privacy

Apply the technology in fan data sharing to ensure anonymity. For example, the consumption history of the Manchester City virtual venue is only used for personalized recommendations, and users need to confirm twice for each use. Clubs can set up committees, composed of technical experts, representatives of the players' union, and legal

professionals, to assess the risk of AI training systems, virtual players and other projects, like Dortmund, after the controversy over AI monitoring of players' social media, established a similar mechanism.

5.4 Ecological Synergy

The first is to cooperate with the government, Manchester photovoltaic project has been subsidized by the British government of 5 million pounds, while providing power to surrounding communities, achieving 12,000 tons/year carbon emission reduction. Based on government cooperation, global recruitment of partners, increase technology suppliers, such as SONY, Jinko energy, etc., and can provide customized solutions, such as Jinko Energy's photovoltaic module efficiency is 18% higher than the industry average. Based on increasing global partners and carrying out effective cross-industry linkage, revenue and overall quality can still be improved under the premise of the diversity of club development. Take Manchester City as an example, live cooperation with Amazon Prime Video, through AI analysis of user viewing behavior, optimize advertising, so that a single advertising revenue increased by 37%

6 Conclusion

Based on the integrated perspective of brand value and digital transformation, this research systematically analyzes the path and practice of management system innovation in professional sports clubs. The main contents include: research background and framework, case analysis (Manchester City Football Club), pain point analysis, transformation suggestions, etc. Under the background of globalization and digitalization, professional sports clubs need to change from a single competitive entity to a comprehensive commercial organization to balance competitive goals and commercial values. Through literature review, the theoretical basis of digital transformation, brand value and club management is sorted out, and the necessity of integrating brand value and technological innovation is proposed. Conduct an effective case study (Manchester City FC). Through transformational pathways (technology infrastructure upgrades), intelligent team management (AI injury prediction) and sustainable energy practices, sports and business can be developed in tandem. As a successful example of digital transformation, the result is a total revenue of 854 million euros in the 2024-2025 season, with a significant increase in the proportion of digital revenue; The size of the fan community expanded to 80 million, and the rate of re-purchase and satisfaction increased significantly; Carbon neutrality target brought forward to 2028.

In the analysis of pain points, the strategic level reflects the contradiction between short-term investment and long-term return and blindly follow the trend of technical routes (such as AC Milan NFT failure cases). On a technical level, it is prone to data silos (Manchester United's youth academy is separated from first-team data), and half-asleep integration is costly (Bayern's system restructuring cost 25 million euros). At the organizational level, the most important factor is the cognitive gap between the management (Real Madrid rejected the meta-universe plan), and some of the management

still retain the traditional solidified thinking and do not dare to try new things. The final reason is the talent gap (89% of clubs lack technical executives).

Transformation suggestions, the first is the technology of the attack, the club can adopt modular architecture, accelerate the landing of technology. On this basis, organizational restructuring is carried out, such as the establishment of CDO positions, cross-department and school-enterprise cooperation to train digital talents. Finally, privacy compliance, the establishment of a data sovereignty alliance and committee to ensure privacy and fairness.

However, this study only uses the example of Manchester City Football Club, which makes the case of this study simple (the study mainly relies on the case of Manchester City, whose capital support of ABU Dhabi consortium and city-level collaborative ecology are special). In this case, it is difficult to directly replicate to small and medium-sized clubs or organizations with different cultural backgrounds.

The second is the timeliness of data. As part of the literature and case data in this study are up to 2025, they do not cover the latest technological progress in AI and other fields, resulting in insufficient quantitative research. This study mainly focuses on qualitative analysis and lacks large sample empirical data to verify the universal ROI model of digital transformation and brand value integration.

Finally, in the social dimension, this study has not discussed enough social equity (such as "digital divide") and cultural conflict (such as traditional fans' acceptance of virtual experience) in digital transformation.

About the future development prospects of this study: First, deepen empirical research, carry out cross-country and cross-league comparative research, analyze the differences in the transformation paths of clubs with different resource endowments, and build a more universal theoretical framework.

Second, explore the application of emerging technologies, and pay attention to the scene landing of generative AI in event commentary and virtual idol development

Strengthen the sustainable development dimension: study the synergies between digital transformation and low-carbon operations (such as carbon footprint tracking, green energy technology), and promote the integration of "two-carbon" goals and business value.

Third, expand social value research and explore the application of digital tools in youth physical education and community public services to balance commercial interests and social responsibilities.

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