

Research on the Application and Innovation of Digital Technology in the Sports Industry

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Abstract. With the profound development of digital technology, the digital transformation of the global sports industry has received increasing attention. This paper primarily conducts a comparative analysis of the application characteristics, innovative practices, research methodologies, and social impacts of digital technology in the sports industry. The study found that the application of digital technology has had a significant impact on the sports industry, with notable differences observed in the areas of digital transformation, intelligent services, and personalized experiences within the industry. It also unveiled the process of digital transformation in the sports industry. The conclusion of this paper holds that research on the sports industry from a digital technology perspective contributes to enhancing understanding of the digitalization of the sports industry and promotes innovative development within it.

1 Introduction

The comparative study on the application and innovation of digital technology in the sports industry is one of the primary responsibilities of information technology and sports science research, and it is also a general term for interdisciplinary critiques. This study can be divided into two main categories: fundamental technical application analysis and non-fundamental social impact research, respectively constituted by the practices of the sports industry and the context of digital technology. To gain a deeper understanding of the digital transformation of the sports industry, researchers also undertake comparative analyses of the sports industry through the lens of digital technology. Since the beginning of the 21st century, the sports industry has become pivotal in digital transformation, and digital technology research has emerged as a critical indicator for assessing its development. In contrast to traditional research on the sports industry, digital technology places greater emphasis on technological application, service innovation, and user experience. Consequently, comparative research topics in the sports industry under the umbrella of digital technology have been proposed, and digital technology research has introduced fresh perspectives for understanding the sports industry.

2 Analysis of the Application Characteristics of Digital Technology in the Sports Industry

2.1 The Impact of Technological Development on the Sports Industry

The characteristics of digital technology represent a concept that has evolved in parallel with technological advancements during the digital transformation of the sports industry.[1] It inherently "permeates" with the ideals of information technology, demonstrating the value orientation of technological application and reflecting the openness and inclusiveness strategies adopted by the sports industry since the early 21st century. Nevertheless, attempts to construct a comprehensive and accurate understanding of the definition and essence of the sports industry based solely on certain singular technological standards remain challenging.

2.2 The Theme of Digital Technology in the Sports Industry

The theme of digital technology serves as a crucial criterion in the sports industry, representing the sporting manifestation of technological application.[2] Information technology critics and scholars have delved into various definitions of the digital technology theme from perspectives such as social impact and user experience. Additionally, some academics contend that the theme revolves around the extent of technological interaction or the exploration of technological disparities. Precisely because the theme of digital technology, to a certain extent, possesses a more universal quality, it falls within the realm of interdisciplinary science aimed at enhancing understanding of technological application. The history of the digital technology theme can even be traced back

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to the early days of sports event broadcasting and data analysis, with its primary activities encompassing the description and interpretation of various technological applications. Furthermore, the concepts and expressions of the digital technology theme are intimately linked to the innovative practices and market contexts of the sports industry. Through digital technology, the sports industry has become a pivotal player in technological exchange.

3 Comparison of Character Images and Technology Applications in the Sports Industry

3.1 Differences in Character Shaping in Technological Applications

Compared to non-digitized sports industries, the digitized sports industry places greater emphasis on the interrelationship between individuals and technology in terms of technological application,[3] exhibiting distinctive modern technological characteristics. While some scholars question the direct relationship between technological application and cultural differences, the majority argue that a technological backdrop can enable rational evaluation of character portrayals. Information technology critics have proposed a classic model that incorporates elements such as character portrayal, technological application, and market context, which has since become a typical tool for analyzing technological applications, leading to the development of the concept of digital technology comparison.

3.2 Character Analysis of Technological Applications

The essence of the concept of character analysis in technological application focuses on the impact of technological differences on shaping individual personalities.[4] Digital technology personality analysis represents the application of information technology psychological thinking within the realm of sports industries. In an effort to overcome the limitations of single-technology application analysis, a new alternative model - the digital technology personality analysis framework - has emerged as a research focus.[5] The fundamental premise of this framework is that sports industry analysis should ensure the effective realization of technological application diversity, establish digital technology standards for character portrayal output, "capture" the influence of technology on character portrayal through technological application analysis, and employ comparative research methods to measure the shaping of personality traits by technological differences.

4 Comparison of Digital Technology Innovation Techniques in the Sports Industry

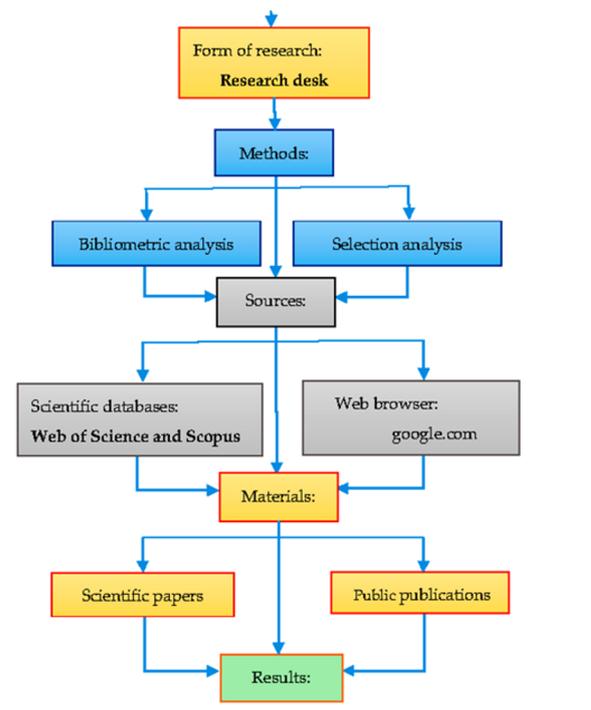


Fig. 1. Schematic diagram of the framework and structure of digital technology in the sports industry

The schematic diagram of the framework and structure of digital technology in the sports industry is shown in Figure 1.

4.1 The Structural Differences in Technological Innovation

Technological innovation is one of the key features of the digital transformation of the sports industry, prominently showcasing its innovative style and market traditions.[6] Through diverse technological approaches, it directly reflects the cultural backdrop and thematic content of sports industry endeavors. The constitutive elements of technological innovation in the sports industry are gradually taking shape, such as the incorporation of virtual reality, augmented reality, and others, while various technological evaluation systems are also gaining increasing attention. Nevertheless, from a digital technology perspective, some technological innovation practices remain at the stage of imitation, deviating from the logical framework and generative mechanisms of originality. This discrepancy has given rise to issues pertaining to technological innovation.

4.2 Comparison of Innovation Characteristics from a Technical Perspective

From the dimension of digital technology, the technological perspective serves as the foundational aspect of innovation in the sports industry and represents the core manifestation of technological differentiation.[7] Consequently, the sports industry primarily adopts a technological perspective as its generative logic. This technological perspective functions as the primary tool in the innovation process and serves as the primary carrier for technological

expression. At the current stage, the sports industry reinforces its control over the technological perspective through digital technology, primarily in three forms: firstly, the selection of technological perspectives. Firstly, it involves clarifying the transition of technological perspectives among different technologies within the sports industry. Secondly, it encompasses the standardization of technological perspectives. This is achieved by establishing standards for technology utilization and market arrangements and by making these technological perspective standards transparent to consumers, thereby realizing standardized control over technology. Thirdly, it refers to the internal process reengineering of technological perspectives. In recent years, numerous sports industries have leveraged technological perspectives as a means to deepen the expression of information technology and enhance the innovativeness of their respective industries.

5 Technological Conflict and Integration in the Sports Industry

5.1 The Manifestations of Technological Conflicts

The fundamental difference in technological conflicts in the sports industry lies in its cultural attributes. The main manifestations of cultural conflicts in the sports industry are differences in values and beliefs, as well as conflicts between market customs and consumption patterns.[8] In the context of digital transformation, accurately identifying, understanding, and respecting these technological differences is the core value and highest criterion for resolving technological conflicts. Currently, the diversity of cultural types and the differences in technological connotations within the sports industry have led to complex manifestations of technological conflicts. While scholars and information technology commentators have attempted to demonstrate and resolve these conflicts through technological applications, inadequate technological integration and a lack of effective technological fusion mechanisms within these applications themselves have emerged. Consequently, this has created "weaknesses" in the application of technology when addressing technological conflicts, thereby affecting the comprehension and acceptance of digital technologies within these applications.

5.2 The Process and Impact of Technological Integration

From a digital technology perspective, the sports industry fails to accurately provide a complete picture of what is required for technological integration. While technological applications evaluate the sports industry primarily in terms of satisfaction, they lack comprehensive information and in-depth analysis mechanisms related to technological integration. At the heart of this issue lies perhaps the complexity and diversity of technological integration. In technological applications, technological integration is often described

as "technological collision" or "technological blending," and its handling of technological differences directly reflects the sports industry's understanding and attitude toward digital technology interactions. However, these descriptions mostly focus on superficial technical characteristics and other information, with a lack of exploration into the deeper impacts and processes of technological integration. Typically, the true effects of technological integration are difficult to obtain or measure. Information asymmetry and imperfect evaluation systems directly contribute to obstacles in the process of technological integration.

6 The Research Significance of the Sports Industry from the Perspective of Digital Technology

6.1 Promoting Digital Technology Understanding in the Sports Industry

From a digital technology perspective, technological differences have long constrained the comprehensive understanding capabilities of the sports industry. Since the early 21st century, the sports industry, amidst the backdrop of digital transformation, has reshaped the interpretation of technological applications through digital technologies. Nevertheless, the drawbacks of traditional research methods continue to hinder the acceptance of digital technologies within these applications. This limitation stems not only from differences in technology and markets but also from the influence of cultural values, suggesting that the understanding of digital technologies in technological applications remains to be refined. Under the premise of digital transformation communication, technological applications are considered as a direct means to promote understanding of digital technologies. However, the practical effect of information technology research that focuses solely on a single technology on technological applications remains debatable. Furthermore, due to difficulties in the technological background, technological applications lack in-depth analysis of digital technologies. Consequently, sports industry research does not always seem to achieve the goal of promoting an understanding of digital technologies. Research in the sports industry is not merely a technical challenge but also confronts deep-seated cultural cognitive issues.

6.2 Research on Digital Technologies to Promote the Sports Industry

Indeed, the sports industry cannot avoid serving as a "laboratory" for digital technology research in terms of technological innovation and market themes. Within the mechanism of digital transformation, the sports industry serves as a standard and effective tool for digital technology research, playing a significant role in facilitating technological understanding. This also renders the sports industry not merely a technical concept but also a cultural one. Consequently,

information technology research centered on "digital technologies" becomes the core mechanism driving digital technology research in the sports industry. The practical evolution of the sports industry generally follows a gradually formed digital technology research path based on technological differences, albeit one that incorporates attempts at technological integration. From technological conflict to technological integration, the sports industry has consistently revolved around technological differences and interactions. While the sports industry should strive for technological innovation to meet the demands of digital transformation, the amplification of technological diversity also presents a dilemma, namely technological integration. Overall, there is still room for improvement in the sports industry in terms of technological innovation and market themes, and its digital technology research remains to be further refined. This is an essential task in driving digital technology research in the sports industry forward.

7 Conclusion

With the deepening of digital technologies, the sports industry has entered a brand-new stage of development, posing fresh challenges and requirements for information technology research. The sports industry is not only a symbol of "digital technologies" and an important means of information technology research but also an urgent need to achieve an understanding of technological applications and maintain market diversity, essentially embodying the inherent requirements of information technology research. Under the guidance of digital technologies, the sports industry constructs the theoretical analysis framework and practical mechanisms for technology. In recent years, modern information technologies such as artificial intelligence have driven information technology research forward. By empowering information technology research with technology and enhancing the precision and scientific rigor of information technology analysis, their value aligns with the inherent logic of information technology research. Therefore, modern information technologies also provide new avenues for information technology research. In summary, the sustainable improvement and development of the sports industry contribute to a better understanding of technology and facilitate progress in information technology research.

References

1. Hutchins B, Rowe D. Sport beyond television: The internet, digital media and the rise of networked media sport[M]. Routledge, 2012.
2. Hutchins B, Rowe D. Digital media sport[M]. Taylor & Francis, 2013.
3. Hutchins B, Rowe D. Sport beyond television: The internet, digital media and the rise of networked media sport[M]. Routledge, 2012.

4. Borgmann A. Technology and the character of contemporary life: A philosophical inquiry[M]. University of Chicago Press, 1984.
5. McAdams D P. Personality, modernity, and the storied self: A contemporary framework for studying persons[J]. Psychological inquiry, 1996, 7(4): 295-321.
6. MacKenzie D, Wajcman J. The social shaping of technology[M]. Open University, 1999.
7. Ellul J. The technological system[M]. Wipf and Stock Publishers, 2018.
8. Markus M L, Silver M S. A foundation for the study of IT effects: A new look at DeSanctis and Poole's concepts of structural features and spirit[J]. Journal of the Association for Information systems, 2008, 9(10): 5.