

Sustainable Development of Large-Scale Sports Events Enabled by New Quality Productivity

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Abstract: By using the methods of literature review and logical analysis, this paper explored the value and dilemma of new quality productivity enabling the sustainable development of large-scale sports events, and put forward the path. Value: It implements low-carbon environmental protection and enables the event to be green and ecological sustainable; It extends the profit chain and enables the event industry to operate sustainably; It changes the communication pattern and enables the cultural influence of the event to be sustainable. Dilemma: The technical foundation is not solid, and the quality improvement drive is weak; The mode conversion lags behind, and the actual effect is difficult to implement; The supply of talents is insufficient, and the operational support is inadequate. Path: We need to strengthen scientific and technological innovation to create new growth drivers; promote mode transformation to establish new patterns and attach importance to talents supply to cultivate new forces.

Keywords: Sports Management; Large-scale Sports Event; Sustainable Development; New Quality Productivity

1. Introduction

The new quality of productivity is the innovation plays a leading role, get rid of the traditional mode of economic growth, productivity development path, with high-tech, high-efficiency, high-quality features, in line with the new development concept of advanced productivity state [1]. Large-scale sports events refer to all levels and types of comprehensive games and single sports events with great influence, which have outstanding role and value in economic development, spiritual and cultural dissemination, and city image shaping [2]. However, under the traditional productivity conditions, large-scale sports events in China still face problems. By analysing the current situation, problems and needs of the sustainable development of large-scale sports events, this study aims to clarify the value implication of the new quality of productivity in empowering the sustainable development of large-scale sports events, to examine their realistic dilemmas, and to put forward the path of realisation, with a view to providing useful theoretical references for the practical development of China's large-scale sports events.

2. Value

2.1. Implement Low-carbon Environmental Protection, Empowering the Event Green Ecological Sustainability

Through technological innovation and conceptual innovation, New Quality Productivity systematically empowers the green and low-carbon transformation of large-scale sports events. In the construction of event carriers, new materials (e.g. low-carbon building materials) reduce the carbon footprint of venues, new processes (e.g. modular design) improve construction efficiency, and new equipment (e.g. intelligent control systems) optimise the management of energy consumption, which together promote the waste-free and intensive development of venues. As a new type of infrastructure, smart venues rely on the Internet of Things and big data technology to achieve dynamic monitoring of energy consumption and precise emission reduction of pollutants. In terms of resource utilisation, new energy technologies (e.g. photovoltaic power generation) reconfigure the energy structure of the event, and innovative production tools (e.g. intelligent water treatment system) enhance resource utilisation efficiency, forming a low-consumption and high-efficiency production model. Through technology integration and system optimisation, the new quality productivity provides the core driving force for the sustainable development of the event, and achieves synergistic enhancement of economic and ecological benefits.

2.2. Extend the Profit Chain, Empowering the Event Industry to Operate in a Sustainable Manner

New quality productivity promotes the optimisation of the operation ecology of the large-scale sports event industry through technological innovation and model reconstruction. In the upgrading of the industry chain, intelligent production tools (such as AI event analysis system) enhance the added value of event products, and digital technology (VR/AR viewing platform) reconstructs the form of content presentation and enhances user experience. In terms of marketing model innovation, data-driven (user behaviour analysis) achieves precise marketing, blockchain technology safeguards the IP value of the event, and cloud computing supports multi-channel distribution, forming a diversified profit model. Through technology integration and process reengineering, the new quality productivity breaks through the bottleneck of limited value-added and single profit in the traditional event industry chain, and builds a sustainable development ecology guided by user demand and supported by technology empowerment.

2.3. Transform the Communication Pattern, Empower the Tournament Culture Impact Sustainable

The new quality communication power reconstructs the cultural communication paradigm of the event through technological integration and breaks through the limitations of traditional media. Its core features are as follows: 1) subject intelligence, AI algorithms, machine writing and other technologies to reshape the content production and distribution mechanism, and enhance the accuracy and infectiousness of cultural communication; 2) practice scenario, the industrial Internet and other tools to expand the application of data resources, giving rise to new forms of communication, such as digital culture and creativity, and virtual marketing; 3) experience embodiment, virtual reality technology to achieve high-precision simulation, and to promote the transformation of the audience from bystanders to immersed participants. (3) Embodiment of experience, with virtual reality technology achieving high-precision simulation and pushing the audience from spectators to immersed participants. Through the multi-dimensional interaction of technology-culture-audience, the new quality communication power extends the time and space boundaries of the cultural communication of the event, and builds a new communication ecology of intelligence, scenario and immersion.

3. Dilemma

3.1. Poor Technological Foundation and Weak Drive for Quality Improvement

The new quality of productive forces with scientific and technological innovation as the core driving force, but its weak technological base restricts the innovation and quality of large-scale sports events. Firstly, the degree of autonomy of key technologies is insufficient. China still relies on imports in semiconductor manufacturing, EDA software and other supportive technologies, and the independent research and development capability of new technologies in the sports field is limited, facing the risk of 'strangulation', which limits the depth and breadth of technological empowerment. Secondly, the efficiency of technology transformation is low. Despite the continuous increase in scientific research investment, the conversion rate of scientific and technological achievements is low, with the patent conversion rates of enterprises, research institutes and universities being 50%, 11.8% and 3.8% respectively, and scientific research projects in the field of sports are mostly oriented to the 'completion' of the project and lack of a mechanism for application and landing. Although intelligent sensing, Internet of Things, cloud computing and other technologies have been able to support real-time monitoring of events, resource optimisation and other functions, their systematic application in event practice is still insufficient, and there is a lack of universal solutions. The weak technical foundation and the lack of transformation capability have jointly restricted the effectiveness of the new quality productivity in empowering the sustainable development of large-scale sports events.

3.2. The Paradigm Shift is Lagging Behind, and Effectiveness is Difficult to Realize

The new quality productivity takes technological innovation as the core driving force, aiming at reconstructing social production relations and institutional system, but its application in large-scale sports events is still restricted by the traditional development mode. Firstly, the rough development model leads to inefficient use of resources. Although the new quality technology can optimise the allocation of resources and reduce the cost of running the event, the current operation of the event is still dominated by high investment and high energy consumption, and the phenomenon of idle venues and waste of resources is widespread,

which restricts the enhancement of the ‘input-benefit’ ratio[3]. Secondly, the fragmented development mode has weakened the synergistic effect. Large-scale sports events involve multiple subjects, and their synergistic efficiency directly affects the sustainability of the event. Although the Internet, big data and other technologies provide a platform for information sharing and collaborative governance, its potential has not yet been fully transformed into actual performance, and the collaboration between subjects is still loose. The ‘inertia’ of the traditional model hinders the effective landing of new quality productivity and limits the transformation of technological potential to the development of events.

3.3. Insufficient Supply of Talents and Inadequate Operational Support

The development of the new quality of productive forces on the supply of large-scale sports events talent puts forward higher requirements, but the current shortage of specialised and composite talents restricts the transformation and upgrading of the event operation mode. Firstly, the training of specialised talents is insufficient [4]. The new quality of productivity relies on the deep integration of information technology and event elements, but China's ICT talent gap is expected to exceed 20 million in 2025, the total number of technical talents is insufficient to limit the application of technology and innovation in the field of events. Secondly, the training of composite talents is lagging behind. The operation of the event requires both proficient sports and mastery of technology cross-border talents, although the university has opened digital sports-related professional, but the curriculum design is biased towards theoretical teaching, the lack of practical scenarios of targeted training, resulting in a disconnect between the training of talents and the event demand. Taking intelligent management and virtual navigation technology as an example, its core technology relies on the support of international enterprises, and the supply of local talents is difficult to meet the technical maintenance and innovation needs of event operation. The shortage of talents has become a key bottleneck for the sustainable development of large-scale sports events empowered by new quality productivity.

4. Path

4.1. Strengthen Scientific and Technological Innovation and Solidify New Kinetic Energy

Science and technology are the underlying support for the new quality of productivity of large-scale sports events. The enhancement of technology research and development and application conversion ability plays a decisive role in the innovation and development of the productivity of sports events. The development level of basic technology determines the upper limit of the development of the new quality productivity, and determines the space and possibility for the new quality productivity to empower large-scale sports events. It is necessary to insist on scientific and technological self-improvement, and attack the basic technology of new productivity.

4.1.1. Focusing on Scientific and Technological Innovation and Enhancing Independent Innovation Capability

On the one hand, increase capital investment in basic technology research and development, incentivize enterprises to innovate independently through special funds and subsidies, and introduce tax incentives to reduce the cost of innovation and attract more enterprises to participate in technology research and development.

On the other hand, build a technology exchange and sharing platform, promote in-depth cooperation among traditional manufacturing enterprises, high-tech enterprises, universities and research institutes to form technology innovation consortiums, conquer core technologies such as high-end chip manufacturing and artificial intelligence algorithms, realize technological autonomy and control, and improve the independent innovation ecology. At the same time, formulate technology research and development layout plan, clarify the regional division of labor, optimize resource allocation through cross-regional cooperation platforms, avoid duplication of construction, and build a national pattern of technology research.

4.1.2. Accurately Matching the Demand of the Event and Accelerating the Transformation of Technology Application

On the one hand, it carries out quarterly event-specific research, goes deep into event sites and training bases, and accurately collects technical demands. It builds a big data platform for events, and uses cloud computing and data analysis technology to form demand reports, providing decision support for intelligent operation of events.

On the other hand, it has set up a special fund for the transformation of sports technology, built an integrated platform for technology research and development, testing and promotion, and organized regular docking sessions for "industry, academia and research" to focus on the pain points of the event to carry out joint research and promote the application of scientific and technological achievements on the ground. At the same time, relying on regional resource advantages, building cross-regional collaborative innovation network, integrating technology research and development, digital application and intelligent management and other resources, to help innovative project incubation and industrialization, to provide a guarantee for the sustainable development of the event.

4.2. Promote Paradigm Shift and Establish a New Paradigm

Mode is the structured expression of the subject's behavior, the intermediary between theory and practice, and is constructed based on cognitive thinking and existing conditions. The productivity change of large-scale sports events needs to be matched with an adaptive operation mode to transform technological empowerment into practical benefits, which requires enhancing the subject's cognitive thinking and leading the paradigm shift.

4.2.1. Resource Integration and Optimal Allocation: Leading the Intensive Development of Events

Abandon the traditional thinking of "seeking a large and comprehensive event and relying on resources", and promote the intensification of the event with the thinking of resource integration and optimal allocation [5].

On the one hand, with the goal of enhancing the benefits of running the event, the team of experts and big data analysis were introduced to carry out scientific planning and multi-dimensional assessment of the feasibility of event preparation. Constructing the event evaluation system, formulating the resource allocation program from the dimensions of social benefits, economic benefits and environmental impacts, clarifying the input and benefit targets, and avoiding blind high investment.

On the other hand, optimize the operation of the event with the help of the Internet, big data, artificial intelligence and other technologies, establish a resource sharing platform, and promote the efficient flow of venues, equipment, volunteers and other resources. Implementing the market-oriented mode of "government support + enterprise operation", supplementing financial input through sponsorship and market-oriented development, and improving the input-benefit ratio of resources.

4.2.2. Openness, Integration and Common Governance: Leading the Synergistic Development of the Event

Break the closed mindset and form a synergistic development model of open sharing and complementary advantages.

Firstly, use new quality technology to build a concerted event co-management platform, integrating information from multiple departments such as sports, public security, medical care, transportation, etc., based on the time and location characteristics of the event, predicting the flow of people and supporting the construction of facilities, real-time monitoring of the event's operation, and forming an efficient coordination mechanism. Secondly, the event coordination committee is formed, joint meetings are held regularly, task division and responsibility mechanisms are clarified, and an intelligent workflow engine is introduced to realize closed-loop management. Finally, it formulates data sharing specifications and security measures, unifies data collection, transmission and storage standards, ensures data security and privacy protection, and realizes interconnection and interoperability of key data. At the same time, a professional technology company is commissioned to develop and maintain the event informationization platform to guarantee the professionalism and stability of technical support.

4.3. Emphasize the Supply of Talents and Cultivate New Forces

People are the most crucial factor in science and technology innovation, and the cause of innovation calls for innovative talents. The productivity change of large-scale sports events must be supported by an adequate supply of talents. This requires a sound system of training and application of new quality talents based on the realistic needs of the development of large-scale sports events.

4.3.1. Optimizing the Environment of the Talent Market to Attract and Retain Top Talent

First, it cooperates with technology-based enterprises, headhunters and industry associations to build a talent management cloud platform. Utilizing artificial intelligence and algorithmic technology, we can classify and archive professional talents, establish "skill profiles", track their technical capabilities and career development dynamics, and provide event-related parties with an accurate talent think tank. At the same time, improve the salary of digital technology talents in the sports sector, narrow the gap with technology-based enterprises, attract more high-end ICT talents to join the sports event industry, and set up incentives to motivate senior technical talents.

Secondly, carry out international exchanges and cooperation, introduce advanced digital technology talent training concepts, and organize talents to go abroad to learn advanced event operation and digital technology application, so as to broaden their cultivation horizons.

Finally, organize cross-industry seminars and forums on sports and information technology to build a platform for talent incubation and innovation exchange and enrich the event talent team.

4.3.2. Improvement of the New Quality Personnel Training System Based on the Reform of the Professional Curriculum and the Curricula

Firstly, new cross-disciplinary courses have been added to the sports majors, and the contents of the courses have been dynamically adjusted to meet the actual demands of the tournaments.

Secondly, the university and enterprises have joined hands with tournament organizers and technical service enterprises to build practical training bases and open up historical tournaments.

Finally, we organize students to participate in the whole process of practical training, covering technical support, on-site operation, data analysis and other aspects, and sign the school-enterprise joint training and employment agreement to provide priority employment opportunities for event-related positions, so as to enhance the match between talent cultivation and event demand. This not only helps to solve the current shortage of "composite" talents, but also realizes cross-departmental and cross-field complementary advantages through the flow of talents, and injects diversified horizons and ideas into the practice of sports production.

5. Conclusion

The power of science and technology empowers the wheel of development, and the wing of innovation leads the way to the future. Empowering large-scale sports events with new quality productivity is an important measure for the sports sector to respond to the momentum of productivity change, and it is also a necessary way for sports events to realize sustainable development. However, productivity change will inevitably bring a series of new requirements and challenges. Only through innovation, localization and precise measures can we grasp the new opportunities of the times, construct new advantages and form new kinetic energy for development, thus promoting the sustainable development of large-scale sports events.

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