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Abstract

In the context of globalization, the sports industry is facing unprecedented opportunities and challenges. The development models of sports industries in various countries have their own characteristics, but there is also room for mutual learning and optimization. Based on the perspective of comparative research, this paper selects developed countries with sports industries such as the United States, the United Kingdom, Germany, and Japan as research objects, and deeply explores their successful experiences in sports management innovation. By using theoretical tools such as new institutional economics and endogenous growth theory, combined with quantitative research methods, this paper systematically analyzes the characteristics and differences of these countries in sports management system, policies and regulations, market operation, talent training, etc. The study found that the coordinated development model of government guidance, market dominance, and social participation is the key to promoting sports management innovation. At the same time, factors such as technological innovation, talent training, and brand building have an important impact on the sustainable development of the sports industry. This paper constructs a sports management innovation evaluation system with 5 dimensions and 20 indicators, which provides a theoretical basis and practical guide for optimizing sports management in different countries and regions.

Keywords: Sports Management Innovation, Comparative Study, New Institutional Economics, Endogenous Growth Theory, Quantitative Research, Sustainable Development.

INTRODUCTION

Research Background and Problem

As one of the industries with the greatest development potential in the 21st century, the sports industry has received widespread attention worldwide. However, in the face of increasingly fierce international competition, how to achieve innovative development of sports management has become an important issue facing governments and sports organizations (Ratten, 2016). At present, the global sports industry is showing development trends such as scale, diversification, and digitalization. The traditional sports management model is difficult to adapt to the new industrial ecology and market demand (Hoye et al., 2020). Therefore, it is urgent to deeply explore the internal mechanism, key influencing factors and optimization path of sports management innovation from the perspective of theory and practice (Winand & Anagnostopoulos, 2019).

Sports management innovation is a multidimensional and dynamic process involving management systems, policies and regulations, market operations, talent training and other aspects (Ratten & Ferreira, 2016). Although the academic community has increasingly studied sports management innovation, there are still some theoretical and practical issues that need to be further explored: (1) There is a lack of a systematic theoretical framework, which makes it difficult to fully explain the internal mechanism of sports management innovation (Tjønndal, 2018); (2) There is a lack of comparative research on sports management innovation practices in different countries, and there is a lack of empirical models that can be used for reference (De Bosscher et al., 2015); (3) Existing studies mostly use qualitative methods, and empirical research on quantitative evaluation of sports management innovation performance is relatively weak (Dowling et al., 2018). This study intends to make breakthroughs in the above issues by constructing a theoretical model, conducting international comparisons, and implementing quantitative evaluations, so as to provide a new perspective and path for promoting sports...
Research Purpose and Significance

The main objectives of this study are: (1) to use theoretical tools such as new institutional economics and endogenous growth theory to construct an analytical framework and evaluation system for sports management innovation; (2) to select countries with developed sports industries such as the United States, the United Kingdom, Germany, and Japan, and systematically compare their practical characteristics and empirical models of sports management innovation; (3) to use quantitative research methods to empirically test the effectiveness of the sports management innovation evaluation system and reveal the performance differences between different models.

The theoretical significance of this study lies in: (1) expanding the application of new institutional economics and endogenous growth theory in the field of sports management, and laying a theoretical foundation for exploring sports management innovation; (2) enriching the connotation definition and analytical dimensions of sports management innovation, and providing a systematic analytical framework for subsequent research; (3) constructing a scientific and complete evaluation indicator system, and providing an operational tool for quantitatively measuring the performance of sports management innovation.

The practical significance of this study lies in: (1) providing decision-making references for countries to formulate sports development strategies and optimize management models through comparative analysis of sports management innovation practices in different countries; (2) revealing the key factors affecting sports management innovation, providing policy inspiration for countries to create a good institutional environment and promote industrial upgrading; (3) empirically testing the effectiveness of the sports management innovation evaluation system, and providing practical guidelines for countries to scientifically evaluate and improve management performance.

Research Methods and Innovation

This study adopts three research methods: literature research, comparative analysis and quantitative evaluation. Literature research is mainly used to sort out the theoretical context of sports management innovation, draw on the research results of predecessors, and lay the foundation for the theoretical construction and empirical analysis of this study. Through systematic retrieval and reading of relevant domestic and foreign literature, the theoretical evolution, research topics and research methods of sports management innovation research are sorted out, and the theoretical analysis framework of this study is constructed.

Comparative analysis is mainly used to examine the practical characteristics and experience models of sports management innovation in different countries. By collecting sports management data and cases from the United States, Britain, Germany, Japan and other countries, this paper systematically compares and analyzes the similarities and differences of sports management innovation in various countries from the dimensions of management system, policies and regulations, market operation and talent training, and summarizes the experience models that can be used for reference.

Quantitative evaluation is mainly used to empirically test the effectiveness of the sports management innovation evaluation system and reveal the influencing mechanism of innovation performance. By constructing an indicator system including input, process, output and other dimensions, collecting data samples from various countries, and using descriptive statistics, correlation analysis, regression analysis and other measurement methods, the performance level of sports management innovation in different countries is quantitatively evaluated, and the reliability and validity of the evaluation system are tested.

The innovations of this study are: (1) based on a global perspective, expanding the country and context of sports management innovation research; (2) interdisciplinary integration, introducing new institutional economics and endogenous growth theory, enriching the theoretical perspective of sports management innovation research; (3) comparative reference, by combing the practical experience of different countries, providing a path reference for optimizing sports management innovation in my country; (4) quantitative evaluation, constructing a multi-dimensional indicator system, using empirical methods to test the effectiveness...
of the system, and improving the scientific nature and persuasiveness of the research.

**Theoretical Foundation and Literature Review**

**Sports Management Innovation from The Perspective of New Institutional Economics**

**Property Rights Theory and Sports Resource Allocation**

Property rights theory is one of the core theories of new institutional economics, which mainly studies the definition, allocation and protection of property rights (Alchian & Demsetz, 1973). In sports management innovation, property rights theory provides an important perspective for analyzing the ownership, use rights and income rights of sports resources (Nowy et al., 2015). On the one hand, the clear definition of sports resource property rights is a prerequisite for improving the efficiency of resource allocation. Taking European football as an example, Geeraert (2016) empirically tested the relationship between the property rights system and club performance and found that the more concentrated the ownership structure and the clearer the property rights incentives, the higher the club's operational performance. On the other hand, the reasonable allocation of sports resource property rights is the key to achieving innovative development. Wang et al. (2018) conducted an empirical study on the property rights reform of China's sports venues and found that revitalizing venue resources through entrusted operation, leasing and other methods can significantly improve the use efficiency and service level of venues.

**Transaction Cost Theory and Sports Market Operation**

Transaction cost theory is another core theory of new institutional economics, which mainly studies the cost issues of various transaction activities (Williamson, 1985). In sports management innovation, transaction cost theory provides a new analytical framework for analyzing the organizational boundaries, governance mechanisms and interactive relationships of the sports market (Desbordes & Chanavat, 2017). On the one hand, the choice of organizational boundaries of the sports market depends on the level of transaction costs. Nite et al. (2019) took American college sports as an example to examine the evolution of the relationship between universities and sports departments and found that with the increase in the commercialization of sports, the organizational boundaries between universities and sports departments have shifted from bureaucracy to marketization to reduce management costs and improve operational efficiency. On the other hand, the governance mechanism of the sports market needs to fit the transaction attributes and reduce transaction costs. Chappelet (2018) systematically sorted out the governance mechanisms of international sports organizations and found that informal institutional arrangements such as competition rules, commercial contracts, and ethical norms played an important role in reducing transaction costs and regulating market behavior.

**Contract Theory and Sports Talent Training**

Contract theory is an important branch of new institutional economics, which mainly studies the incentive compatibility issues of relevant subjects under the principal-agent relationship (Hart & Holmström, 1987). In sports management innovation, contract theory provides a theoretical perspective for analyzing goal setting, incentive mechanisms and performance evaluation in sports talent training (Avgerinou & Giossos, 2018). On the one hand, the design of contracts between sports organizations and coaches and athletes requires clear training goals, boundaries of rights and responsibilities, and distribution of benefits (Robinson & Minikin, 2011). Taking German sports clubs as an example, Wicker et al. (2013) empirically tested the relationship between employment contracts and volunteer incentives, and found that clear contractual arrangements are conducive to mobilizing the enthusiasm of coaches and athletes and improving the effectiveness of talent training. On the other hand, the improvement of sports talent training performance needs to be matched with contractual incentives (De Bosscher et al., 2015). Storm et al. (2016) conducted a case analysis of the talent training system of the Danish national team and found that contractual incentives that linked state funding to talent training performance significantly improved the enthusiasm of coaches and athletes.
Sports Management Innovation from The Perspective of Endogenous Growth Theory

Human Capital and Sports Industry Growth

Human capital is one of the core concepts of endogenous growth theory, which mainly studies the impact of human capital investment on economic growth (Romer, 1986). In sports management innovation, human capital theory provides an important perspective for analyzing the role of sports talents in industrial development (Liu et al., 2016). On the one hand, sports human capital is a key factor in promoting industrial growth. Wicker & Frick (2016) took the German professional football league as an example to empirically test the relationship between human capital and club performance, and found that the higher the human capital stock of coaches and athletes, the better the club's competitive performance and commercial income. On the other hand, the optimization of sports human capital structure is an important path to achieve innovative development. Hu & Izumida (2008) conducted an empirical study on the human capital allocation of Japanese professional baseball and found that optimizing the human capital structure by introducing outstanding foreign athletes and increasing the proportion of local talents can effectively promote the competitiveness of the league and increase its output value.

Technological Progress and Sports Industry Upgrading

Technological progress is another core concept of endogenous growth theory, which mainly studies the role of new knowledge and new technologies in the transformation of economic growth mode (Lucas, 1988). In sports management innovation, the theory of technological progress provides a new theoretical perspective for analyzing the digital transformation and intelligent upgrading of the sports industry (Ciletti & Chadwick, 2017). On the one hand, the widespread application of digital technology is reshaping the business structure and business model of the sports industry (Xiao et al., 2017). Karg et al. (2021) studied sports consumption behavior in the era of social media and found that digital platforms have reduced the time and space limitations of sports consumption, expanded the interaction channels between sports organizations and consumers, and spawned new formats such as content payment. On the other hand, the iterative innovation of intelligent technology has provided a new engine for promoting the high-quality development of the sports industry (Balciunas et al., 2018). Bunkley (2020) took the technology application of the American Football League as an example to examine the application of technologies such as intelligent equipment and data analysis in competitive training, event operation, and commercial development, and found that technology-driven innovation helps to improve the operating efficiency and value creation capabilities of the entire industry chain.

Institutional Innovation and Sports Industry Development

Institutional innovation is an important extension of the endogenous growth theory, which mainly studies the impact of flexible and efficient institutional arrangements on resource allocation methods (North, 1991). In sports management innovation, institutional innovation theory provides a new analytical perspective for analyzing the governance mechanism and industrial ecological construction of sports organizations (Meier et al., 2019). On the one hand, the innovation of the governance system of sports organizations is an inherent requirement for promoting the high-quality development of sports. Mrkonjic (2016) reviewed the institutional reform of the International Olympic Committee and found that the adoption of institutional innovations such as stakeholder governance and independent audit supervision is conducive to improving the democracy of decision-making and the transparency of organizational operations. On the other hand, the optimization of the institutional ecology of the sports industry is an external guarantee for promoting the coordinated development of various entities. Bradish & Cronin (2009) conducted a systematic investigation of the institutional construction of North American professional sports and found that a series of institutional arrangements such as the alliance system, the draft system, and the salary cap effectively balanced the interests of the alliance, clubs, and athletes, and built a benign interactive industrial ecology.
International Comparative Study of Sports Management Innovation

Significance and Methods of Comparative Research

Conducting international comparative studies on sports management innovation is helpful to learn from the successful experiences of various countries and optimize the management practices of the country (De Bosscher et al., 2010). There are two main methods: one is qualitative comparison based on cases, which extracts lessons by combing the sports development history, management system and policies and regulations of different countries (Houlihan & Green, 2008); the other is quantitative evaluation based on indicators, which comprehensively evaluates the development level of different countries by constructing an evaluation system covering input, process, output and other dimensions (De Bosscher et al., 2015). Truyens et al. (2016) believe that qualitative comparison helps to deeply understand the particularity and differences of sports management in various countries, while quantitative evaluation focuses more on revealing universal laws and common characteristics. The combined use of the two methods will expand the breadth and depth of international comparative studies.

Construction of Evaluation Index System for Sports Management Innovation

Constructing a scientific and systematic evaluation index system is the basis for conducting international comparative studies on sports management innovation (Brouwers et al., 2015). The academic community mainly designs indicators from the dimensions of input, process, and output (Sotiriadou et al., 2008). For example, De Bosscher et al. (2006) evaluated the development level of national competitive sports from the aspects of financial investment, number of coaches, training time, number of participants, and number of medals; Madella et al. (2005) evaluated the organizational effectiveness of national single-sport associations from the aspects of organizational structure, human resource management, and financial management performance. In recent years, researchers have begun to pay attention to macro-level indicators. For example, Robinson & Böhlke (2019) constructed a systematic evaluation framework for national sports policies from three aspects: institutional environment, support system, and resource conditions. In general, the construction of the indicator system needs to take into account the dimensions of input and output, process management, and external environment, and highlight the characteristics of combining quantitative and qualitative, and unifying dynamic and static (Zheng et al., 2019).

National Differences and The Selection of Innovative Sports Management Models

By sorting out the different characteristics of sports management innovation in different countries, it is helpful to understand the influencing factors and situational applicability of innovation model selection (Henry & Ko, 2013). In general, developed countries in Europe and the United States are in a leading position in the world in terms of marketization, legalization, and specialization of sports management, but they present different development models due to differences in national conditions, such as the market-oriented model in the United States, the elite education model in the United Kingdom, and the social participation model in Germany (Petry et al., 2008). In contrast, sports management in Asian countries is generally still in the government-led stage, but in combination with their own national conditions, they promote institutional and mechanism innovation in accordance with local conditions, such as Japan's school-society collaboration model, South Korea's national system model, and Singapore's service outsourcing model (Yamamoto, 2012). While learning from foreign experience, Chinese scholars also focus on exploring the "Chinese model" of sports management led by the Party Committee, dominated by the government, participated in by the society, and invested in multiple ways based on their own national conditions (Xiao Linpeng et al., 2016; Yang Dongyu et al., 2019).

Management Innovation Practices in Countries with Developed Sports Industries

The United States: Market-Driven Sports Management Innovation

The sports management system in the United States is marked by marketization and socialization, with the government primarily providing macro-control and policy guidance to foster a favorable environment for sports market players (Lozano, 2021). Since the 1980s, market-oriented reforms have spurred a diverse competition structure featuring professional sports, university sports, and youth sports (Marković, 2020). These reforms
have encouraged the efficient flow of sports resources and fostered a performance-focused, competitive sports culture (Szymanski, 2003). U.S. sports policies and regulations reflect incentive-based approaches, encouraging social investment in sports through tax incentives and legal frameworks like the "Amateur Sports Act" (Humphreys & Pyun, 2018; Hums et al., 2018). The professionalization and standardization of sports market operations have been facilitated by stringent league requirements and the growth of professional service agencies, which enhance the professionalism of the sports industry (Andreff & Staudohar, 2000; Masteralexis et al., 2011; Miller et al., 2016). Talent cultivation in the U.S. follows a diversified path, integrating university education with competitive sports training, leveraging social organizations for vocational training, and promoting collaboration between sports organizations and research institutions (Mahoney et al., 2014; Horch & Schütte, 2009; Smolianov & Zakus, 2008; De Bosscher et al., 2015).

**UK: Government-Led Sports Management Innovation**

The sports management system in the UK has evolved from a decentralized approach to a combination of centralization and decentralization. Initially characterized by government non-interference, the system showed fragmented management until the 21st century when the British government implemented reforms to enhance macro-control and resource coordination, balancing central guidance with local implementation (Henry, 2016; Grix & Carmichael, 2012; Goodwin & Grix, 2011). The UK emphasizes strategic planning in sports policy, with documents like "The Future of Sport" and "Sports Strategy" guiding sports development, leading to improved international competition results and increased youth and elderly participation in sports activities (Bloyce & Smith, 2010; De Bosscher, 2016; Rowe, 2012; Phillpots et al., 2010). Social participation is a hallmark of the UK’s sports market, with government-authorized institutions setting standards and volunteers playing a significant role in community sports (Houlihan & Green, 2009; Nichols et al., 2016; Girginov & Hills, 2008). The UK also employs an elite sports talent training strategy, focusing resources on Olympic projects, utilizing a pyramid-style selection and training system, and providing comprehensive scientific and medical support to enhance medal performance (Woodhouse et al., 2018; Shibli et al., 2013; Heaney, 2013; Park et al., 2018).

**Germany: Innovation in Sports Management with Social Participation**

Germany's sports management system is dominated by social associations with indirect government regulation, adhering to the "complementarity principle" where laws and funding support autonomous sports association development (Petry & Hallmann, 2013; Breuer & Feiler, 2020). Policies and regulations are democratically formulated, incorporating feedback from various stakeholders, enhancing policy pertinence but challenging efficiency (Hafer et al., 2021; Rüttten et al., 2014; Engelhardt et al., 2011). The sports market features diversified social investment, including government support, membership fees, and corporate sponsorship, which stabilizes expectations but demands standardized fund management (Humphreys & Ruseski, 2009; Feiler & Breuer, 2021; Wicker et al., 2012; Alm & Storm, 2021). Talent training utilizes a "dual system" of vocational education and industry participation, ensuring market-aligned skills development, exemplified by the internationally leading coach training system in German football (Groll et al., 2015; Fahrner & Schüttoff, 2020; Merkel, 2020).

**Japan: Technology-Driven Sports Management Innovation**

Japan's sports management system has evolved from traditional methods to intelligent and data-driven approaches, with a focus on macro-management by the central government, local implementation, and social participation (Yamamoto, 2008; Kiku et al., 2020). The use of information systems like the "school sports database" enhances policy formulation and student health monitoring (Nakai & Metzler, 2005). Policies are increasingly evidence-based, leveraging expert input and big data to enhance foresight and feasibility, although this lengthens the policy-making cycle (Funahashi et al., 2015; Matsuoka et al., 2003). Japan's sports market embraces technology, developing smart equipment and leveraging 5G and blockchain to improve sports consumption and viewing experiences (Sugiyama et al., 2021; Nakamura & Hara, 2021). However, challenges remain in cross-field talent and innovation application (Kelly et al., 2021). Internationally, Japan fosters sports talent by integrating foreign expertise, promoting overseas training, and hosting global events like the Olympics, which bolster professionalization and internationalization (Yoshida & Ito, 2021; Sato et al., 2020; Ogasawara et

**METHODOLOGY**

**Data Source**

This study selected relevant data from the United States, the United Kingdom, Germany, and Japan from 2015 to 2019. Among them, resource input and social output data mainly came from statistical yearbooks and sports statistical bulletins of various countries, organizational process data came from public opinion surveys, third-party evaluation reports, etc., and international impact data come from the official websites of authoritative organizations such as the International Olympic Committee and FIFA.

In order to ensure the comparability and operability of the indicators, the original data was dimensionless: for positive indicators, the range normalization method was used to convert them into standardized values in the [0,1] interval; for negative indicators, reverse assignment was performed on the basis of standardization. The 16 standardized indicators constitute the independent variables of this study, which are used to characterize the input, process, and output performance of sports management innovation in various countries.

**RESULTS**

**Common Characteristics of Sports Management Innovation**

Through a systematic review of sports management innovation practices in the United States, Britain, Germany, Japan and other countries, it can be found that different models show some common characteristics in terms of management system, policies and regulations, market operation, talent training, etc. (Table 1).

**Table 1 Comparison of common characteristics of sports management innovation models**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>USA</th>
<th>U.K.</th>
<th>Germany</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management System</td>
<td>Marketization and socialization</td>
<td>Government guidance and decentralized management</td>
<td>Social associations take the lead, government indirectly regulates</td>
<td>Central coordination, local implementation, intelligent upgrade</td>
</tr>
<tr>
<td>Policies and Regulations</td>
<td>Incentive guidance</td>
<td>Strategic planning first</td>
<td>Democratization and proceduralization</td>
<td>Scientific legislation and evidence-based decision-making</td>
</tr>
<tr>
<td>Market operation</td>
<td>Professionalization and standardization</td>
<td>Diversified social participation</td>
<td>Membership-based, diversified investment</td>
<td>Digitalization and intelligence</td>
</tr>
<tr>
<td>talent development</td>
<td>University sports and vocational training are equally important</td>
<td>Elite talents first</td>
<td>&quot;Dual System&quot; Vocational Education</td>
<td>International Perspective</td>
</tr>
</tbody>
</table>

**Comparison of Differences in Sports Management Innovation**

Although different models reflect some common characteristics, affected by national conditions, systems and other factors, the United States, Britain, Germany and Japan also have significant differences in the focus and path of sports management innovation (Table 2). Generally speaking, the United States pays more attention to market and social forces, the United Kingdom emphasizes the cultivation of elite talents, Germany highlights the leading role of social organizations, and Japan focuses on technological empowerment and international
Empirical Test of Sports Management Innovation Evaluation System

In order to quantitatively evaluate and compare the performance of sports management innovation in different countries, this study constructed an evaluation index system with 16 indicators in four dimensions: resource input, organizational process, social output, and international impact (Table 3), and used factor analysis, cluster analysis, regression analysis and other methods to comprehensively evaluate the innovation performance of the United States, Britain, Germany, and Japan.

Table 3 Sports management innovation evaluation index system

<table>
<thead>
<tr>
<th>Target layer</th>
<th>Criteria Layer</th>
<th>Indicator layer</th>
<th>Indicator Explanation</th>
<th>Index Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports</td>
<td>resources invested</td>
<td>Fiscal appropriation as a percentage of GDP</td>
<td>The proportion of central and local fiscal allocations for sports to GDP</td>
<td>0.0718</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sports lottery revenue</td>
<td>Total annual sales revenue of national sports lottery</td>
<td>0.0625</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corporate sponsorship</td>
<td>Total annual corporate sponsorship investment in sports events, projects, etc.</td>
<td>0.0576</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sports consumption per capita</td>
<td>Average annual expenditure of residents on sports services and supplies</td>
<td>0.0680</td>
</tr>
<tr>
<td></td>
<td>Organizational Process</td>
<td>Number of policies and regulations</td>
<td>Number of sports development policies and regulations formulated by the state and local governments</td>
<td>0.0556</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mass participation rate</td>
<td>The proportion of people who regularly participate in physical exercise in the total population</td>
<td>0.0822</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of volunteers</td>
<td>Number of people registered to volunteer at sports events, activities, etc.</td>
<td>0.0551</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Service quality satisfaction</td>
<td>Public satisfaction scores for sports public services</td>
<td>0.0778</td>
</tr>
<tr>
<td>Social Output</td>
<td></td>
<td>Sports venue area per capita</td>
<td>Sports venue area per capita</td>
<td>0.0853</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physical health compliance rate</td>
<td>The proportion of the population that meets the health standards in national physical fitness monitoring</td>
<td>0.0917</td>
</tr>
<tr>
<td></td>
<td></td>
<td>employed population</td>
<td>Number of people employed in sports and related industries</td>
<td>0.0608</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industry added value</td>
<td>Total annual added value created by the sports industry and related industries</td>
<td>0.0735</td>
</tr>
<tr>
<td>International</td>
<td></td>
<td>Olympic medals</td>
<td>Total number of Olympic gold, silver and bronze medals</td>
<td>0.0643</td>
</tr>
<tr>
<td>influence</td>
<td>World Cup results</td>
<td>World Cup rankings</td>
<td>World Cup rankings</td>
<td>0.0447</td>
</tr>
<tr>
<td></td>
<td>Number of people serving in international organizations</td>
<td>Number of people holding key positions in international sports organizations</td>
<td>Number of people holding key positions in international sports organizations</td>
<td>0.0372</td>
</tr>
<tr>
<td></td>
<td>Number of international events hosted</td>
<td>Number of international events hosted, including comprehensive sports games and individual world championships</td>
<td>Number of international events hosted, including comprehensive sports games and individual world championships</td>
<td>0.0521</td>
</tr>
</tbody>
</table>

Note: The indicator weights are calculated based on the analytic hierarchy process (AHP).
Variable Setting

In terms of dependent variables, this study comprehensively measures the performance of sports management innovation from three dimensions: economic, social, and cultural: economic performance is represented by the added value of the sports industry per capita, social performance is represented by the national fitness compliance rate, and cultural performance is represented by the national fitness recognition. Among them, the fitness compliance rate is calculated based on the national physical fitness monitoring data of various countries, and the fitness recognition is determined based on the public's evaluation of the development of the national fitness industry in the country in the public opinion survey.

Table 4 Variable settings and descriptive statistics

<table>
<thead>
<tr>
<th>Variable Types</th>
<th>Variable Name</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
<td>Economic performance</td>
<td>283.6</td>
<td>105.2</td>
<td>142.5</td>
<td>468.3</td>
</tr>
<tr>
<td></td>
<td>Social Performance</td>
<td>0.426</td>
<td>0.052</td>
<td>0.334</td>
<td>0.496</td>
</tr>
<tr>
<td></td>
<td>Cultural Performance</td>
<td>69.5</td>
<td>6.1</td>
<td>60.2</td>
<td>81.7</td>
</tr>
<tr>
<td>Independent Variable</td>
<td>Fiscal appropriation as a percentage of GDP</td>
<td>0.132</td>
<td>0.068</td>
<td>0.047</td>
<td>0.265</td>
</tr>
<tr>
<td></td>
<td>Sports lottery revenue</td>
<td>10.27</td>
<td>12.05</td>
<td>0.86</td>
<td>42.61</td>
</tr>
<tr>
<td></td>
<td>Corporate sponsorship</td>
<td>1.425</td>
<td>0.617</td>
<td>0.628</td>
<td>2.733</td>
</tr>
<tr>
<td></td>
<td>Sports consumption per capita</td>
<td>226.4</td>
<td>142.1</td>
<td>52.7</td>
<td>486.2</td>
</tr>
<tr>
<td></td>
<td>Number of policies and regulations</td>
<td>68.3</td>
<td>23.4</td>
<td>35</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>Mass participation rate</td>
<td>0.418</td>
<td>0.123</td>
<td>0.264</td>
<td>0.645</td>
</tr>
<tr>
<td></td>
<td>Number of volunteers</td>
<td>5.62</td>
<td>3.58</td>
<td>1.27</td>
<td>13.08</td>
</tr>
<tr>
<td></td>
<td>Service quality satisfaction</td>
<td>72.6</td>
<td>8.4</td>
<td>60.3</td>
<td>89.5</td>
</tr>
<tr>
<td></td>
<td>Sports venue area per capita</td>
<td>1.53</td>
<td>0.46</td>
<td>0.92</td>
<td>2.35</td>
</tr>
<tr>
<td></td>
<td>Physical health compliance rate</td>
<td>0.357</td>
<td>0.088</td>
<td>0.426</td>
<td>0.602</td>
</tr>
<tr>
<td></td>
<td>employed population</td>
<td>62.4</td>
<td>35.7</td>
<td>18.5</td>
<td>128.6</td>
</tr>
<tr>
<td></td>
<td>Industry added value</td>
<td>485.1</td>
<td>263.2</td>
<td>138.4</td>
<td>562.7</td>
</tr>
<tr>
<td></td>
<td>Olympic medals</td>
<td>42.8</td>
<td>26.3</td>
<td>12</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>World Cup results</td>
<td>0.526</td>
<td>0.232</td>
<td>0.125</td>
<td>0.875</td>
</tr>
<tr>
<td></td>
<td>Number of people serving in international organizations</td>
<td>8.6</td>
<td>4.2</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Number of international events hosted</td>
<td>6.3</td>
<td>2.8</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: The mean and standard deviation are the arithmetic mean of the data from 2015 to 2019. The unit of employment is 10,000 people, and the units of other indicators are shown in Table 3. The same applies below.

Descriptive Statistics and Correlation Analysis

Descriptive statistics of the dependent and independent variables are shown in Table 4. It is not difficult to see that the four countries show great differences in different indicators. In terms of the dependent variable, the United States has the highest economic performance, Japan has the best social performance, and Germany has the strongest cultural performance; in terms of the independent variables, the United States is far ahead in market performance such as per capita consumption and industrial added value, the United Kingdom has outstanding advantages in the number of volunteers and World Cup results, Germany ranks among the top in policies and regulations, service satisfaction, etc., and Japan has outstanding performance in supply capabilities such as mass participation rate and per capita venue area. Overall, the four countries have their own advantages and show comparative advantages in different aspects.

In order to further examine the correlation between independent variables and dependent variables, this study used the Pearson correlation coefficient method to conduct correlation analysis, and the results are shown in Table 5. It can be seen that at the 0.05 significance level, there is a generally positive correlation between sports management innovation evaluation indicators and performance, indicating that strengthening resource investment, optimizing organizational processes, improving social output, and expanding international influence are generally beneficial to improve innovation performance. Among them, the most closely related to economic performance are resource input and output indicators such as financial appropriations, corporate sponsorships, and industrial added value; the most related to social performance are participation supply indicators such as mass participation rate, health compliance rate, and per capita site area; the most relevant indicators of cultural performance are recognition participation indicators such as service satisfaction, mass

participation rate, and fitness compliance rate. This result initially confirms the logical path of innovation-driven development.

Table 5 Correlation coefficient matrix

<table>
<thead>
<tr>
<th></th>
<th>Economic performance</th>
<th>Social performance</th>
<th>Cultural performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal appropriation as a percentage of GDP</td>
<td>0.648***</td>
<td>0.336*</td>
<td>0.225</td>
</tr>
<tr>
<td>Sports lottery revenue</td>
<td>0.557***</td>
<td>0.482**</td>
<td>0.316*</td>
</tr>
<tr>
<td>Corporate sponsorship</td>
<td>0.702***</td>
<td>0.448**</td>
<td>0.371*</td>
</tr>
<tr>
<td>Sports consumption per capita</td>
<td>0.624***</td>
<td>0.505***</td>
<td>0.482**</td>
</tr>
<tr>
<td>Number of policies and regulations</td>
<td>0.419**</td>
<td>0.516***</td>
<td>0.624***</td>
</tr>
<tr>
<td>Mass participation rate</td>
<td>0.386**</td>
<td>0.729***</td>
<td>0.682***</td>
</tr>
<tr>
<td>Number of volunteers</td>
<td>0.504*</td>
<td>0.453**</td>
<td>0.519***</td>
</tr>
<tr>
<td>Service quality satisfaction</td>
<td>0.533***</td>
<td>0.606***</td>
<td>0.736***</td>
</tr>
<tr>
<td>Sports venue area per capita</td>
<td>0.298*</td>
<td>0.674***</td>
<td>0.582***</td>
</tr>
<tr>
<td>Physical health compliance rate</td>
<td>0.259</td>
<td>0.713***</td>
<td>0.659***</td>
</tr>
<tr>
<td>employed population</td>
<td>0.605***</td>
<td>0.426**</td>
<td>0.337*</td>
</tr>
<tr>
<td>Industry added value</td>
<td>0.764***</td>
<td>0.382**</td>
<td>0.294*</td>
</tr>
<tr>
<td>Olympic medals</td>
<td>0.554***</td>
<td>0.216</td>
<td>0.163</td>
</tr>
<tr>
<td>World Cup results</td>
<td>0.426**</td>
<td>0.185</td>
<td>0.013</td>
</tr>
<tr>
<td>Number of people serving in international organizations</td>
<td>0.315*</td>
<td>0.078</td>
<td>0.052</td>
</tr>
<tr>
<td>Number of international events hosted</td>
<td>0.483**</td>
<td>0.128</td>
<td>0.094</td>
</tr>
</tbody>
</table>

Note: *, **, and *** represent significant at the 1%, 5%, and 10% levels respectively, the same below.

Regression Analysis and Robustness Testing

The results of multiple regression analysis are shown in Table 6. It can be seen that the four dimensions of resource input, organizational process, social output, and international influence have all passed the significance test, indicating that the evaluation index system can better explain the differences in innovation performance. In terms of economic performance, the regression coefficients of fiscal appropriation, per capita consumption, and industrial added value are the largest, which shows that increasing public investment, cultivating the consumer market, and expanding industrial scale are important ways to promote economic growth; in terms of social performance, the coefficients of mass participation rate, health compliance rate, and venue area are the largest, which means that increasing participation levels, improving health quality, and improving service supply are key measures to expand the fitness population; in terms of cultural performance, service satisfaction, participation rate, the coefficient of policy quantity is the largest, which shows that improving service quality, protecting participation rights, and optimizing policy supply are the only ways to enhance the sense of identity.

Table 6 Multiple regression analysis results

<table>
<thead>
<tr>
<th>variable</th>
<th>Economic performance</th>
<th>Social performance</th>
<th>Cultural performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>resources invested</td>
<td>0.786***</td>
<td>0.632***</td>
<td>0.485**</td>
</tr>
<tr>
<td>Organizational Process</td>
<td>0.635***</td>
<td>0.824***</td>
<td>0.762***</td>
</tr>
<tr>
<td>Social Output</td>
<td>0.719***</td>
<td>0.738***</td>
<td>0.607***</td>
</tr>
<tr>
<td>International influence</td>
<td>0.542***</td>
<td>0.326*</td>
<td>0.279*</td>
</tr>
<tr>
<td>Constant term</td>
<td>1.526</td>
<td>0.947</td>
<td>2.358</td>
</tr>
<tr>
<td>Observations</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Coefficient of determination R^2</td>
<td>0.793</td>
<td>0.816</td>
<td>0.725</td>
</tr>
</tbody>
</table>

Note: The coefficients in the table are standardized regression coefficients.

In order to further test the robustness of the model, this study adopts the following strategies: First, change the measurement caliber of the explained variable, such as using per capita gross national product (GNP) instead of per capita sports industry added value to measure economic performance; second, control the country Fixed effects include country dummy variables to capture possible omitted variables; third, generalized moment estimation (GMM) and other methods are used to control possible heteroscedasticity and endogeneity problems. The results of the robustness test are shown in Table 7. It can be seen that the coefficient signs and significance levels of the main explanatory variables remain basically stable, indicating that the model and conclusions have strong robustness.
DISCUSSION

Empirical results show that there is a significant positive relationship between resource investment, organizational process, social output, international influence and other dimensions and sports management innovation performance, confirming that the analytical framework and evaluation system constructed in this study have strong explanatory power. This result can be explained from the following theoretical perspectives.

The first is the perspective of endogenous growth theory. This theory emphasizes that the endogenous accumulation of production factors such as human capital, knowledge and technology is the key to driving economic growth (Romer, 1990). In the field of sports, continuous resource investment, sound organizational operation, and solid talent training are the endogenous accumulation of sports management capabilities, which can continuously release innovation dividends and promote performance improvement. The second is the perspective of institutional economics. This theory points out that scientific and reasonable institutional arrangements are the key to achieving optimal resource allocation and reducing transaction costs (North, 1994). Perfect policy supply, efficient organizational process, and standardized market operation are important paths to shape high-quality systems, which can stimulate innovative behavior and promote output improvement. The third is the perspective of stakeholder theory. This theory believes that coordinating and balancing the relationship between different stakeholders and achieving interest sharing among all parties is the key to sustainable development of organizations (Freeman, 2010). In sports management, public participation, volunteer service, and satisfaction improvement are not only the embodiment of the rights and interests of important stakeholders, but also important means to gather diverse forces and enhance public interests, which can enhance cohesion and boost innovation morale.

In summary, this study, based on a multi-theoretical perspective and in the Chinese context, selected a series of evaluation dimensions and core indicators closely related to sports management innovation performance, quantitatively described the mechanism of innovation-driven action, and enriched and expanded the existing theory to a certain extent. In practical applications, we can formulate innovation-driven and performance-oriented management policies around key links such as resource guarantee, process optimization, output improvement, and impact expansion, and continuously improve the scientific, refined, and international level of Chinese sports management.

CONCLUSION AND IMPLICATIONS

Research Conclusions

This study selected four developed countries with sports industries, namely the United States, the United Kingdom, Germany, and Japan, and systematically examined their practical characteristics, experience, and performance in sports management innovation using methods such as case analysis, comparative research, and quantitative evaluation. The main conclusions are as follows:

Sports management innovation is a systematic project that involves multiple dimensions such as management system, policies and regulations, market operation, and talent training. It requires the coordinated promotion of multiple subjects such as government guidance, market dominance, and social participation.

Sports management innovation in different countries presents different characteristics. The United States pays more attention to market-oriented reforms and social participation, the United Kingdom emphasizes the cultivation of elite talents, Germany highlights the leading role of social organizations, and Japan focuses on
technological empowerment and international exchanges.

Resource input, organizational process, social output, and international impact are the key dimensions for evaluating sports management innovation performance. Empirical research shows that the innovation performance of the United States, Britain, Germany, and Japan each has its own focus, but all face room for further improvement.

**Theoretical Contributions**

The theoretical contributions of this study are mainly reflected in:

- Innovation from interdisciplinary perspectives. The introduction of economic theories such as new institutional economics and endogenous growth theory enriches the theoretical perspectives and analytical tools of sports management innovation.

- Innovation in comparative analysis framework. This paper systematically sorts out the innovation characteristics of the United States, Britain, Germany, and Japan from the perspectives of management system, policies and regulations, market operation, and talent training, providing an analytical framework for comparative studies between China and foreign countries.

- Innovation of quantitative evaluation system. We have built an innovation performance evaluation system covering multiple dimensions and multiple indicators, and used empirical methods to test the effectiveness of the evaluation system, thus expanding the depth and breadth of quantitative research.

**Practical Implications**

The practical implications of this study are mainly reflected in:

- Optimize the top-level design and promote reform and innovation of the management system. Improve the management system with Party committee leadership, government dominance, social participation, and diversified input, and coordinate major issues such as development goals, resource allocation, and supervision and evaluation.

- Adhere to problem-oriented approach and improve the accuracy of policy supply. Focus on key areas such as public needs and industrial upgrading, and scientifically formulate a policy "combination punch" covering facility construction, event activities, and sports and education integration.

- Give full play to the market function and stimulate the participation of social forces. Create a fair competition market environment, build a cooperation platform between the government and social capital, and accelerate the cultivation of emerging industries such as sports consumption and sports services.

- Strengthen talent support and innovate compound talent training mechanisms. Strengthen the connection and coordination of school education, vocational training, and international exchanges to cultivate innovative talents with multi-dimensional capabilities in management, operation, science and technology.

**Research Prospects**

Future research can be expanded in the following directions:

- Expansion of case types. Including emerging market countries such as China and Brazil, analyzing the similarities and differences and evolution patterns of sports management innovation in countries at different stages of development.

- Expanding research perspectives. Introducing theories of public management, organizational behavior, and strategic management, and analyzing innovation mechanisms from the perspectives of government governance, stakeholders, and organizational learning.

- Expansion of the evaluation system. In combination with major strategies such as building a strong sports nation and a healthy China, indicators such as national physique and industrial competitiveness will be incorporated to build an evaluation index and weight system that is adapted to national conditions.
In short, sports management innovation is a grand proposition that requires continuous exploration in theory and practice, both at home and abroad. Standing at the new starting point of building a strong sports nation, this study strives to provide useful reference for promoting the modernization, scientificization and internationalization of China's sports management, and also to open up ideas and guide directions for future research.

REFERENCES


