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ORIGINAL

STRATEGIC PATHWAYS FOR THE INTEGRATED DEVELOPMENT OF LEISURE SPORTS AND RURAL ECOLOGICAL SUSTAINABILITY

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ABSTRACT

In this paper, we clarify the connotation and composition of the ecosystem of the leisure sports industry and analyse the connotation of the efficiency of the ecosystem of the leisure sports industry. Secondly, the evaluation index system is constructed, and the DEA-SBM model and GML index are used to analyse the time trend and geographical differences of the ecosystem efficiency of leisure sports industry from both static and dynamic perspectives. Next, the six categories of influencing factors of leisure sports industry ecosystem efficiency were sorted out by literature analysis method, and their mechanism of action was analysed. 13 influencing factors were selected for empirical analysis by combining the connotation of leisure sports industry ecosystem and data availability. Finally, the empirical results of efficiency and influencing factors are used to propose paths to improve the efficiency of the ecosystem of leisure sports industry. One public factor is extracted from each of the internal operation system and industrial ecological environment of leisure sports, and the public factor of the internal operation system is named as the internal innovation factor of the industry, and the public factor of the industrial ecological environment is named as the institutional innovation factor, and then the extracted public factors are embedded into the Harken model to identify the sequential covariates that affect the evolutionary development of the ecosystem of leisure sports industry. The research results show that the sequential covariates affecting the evolutionary development of the ecosystem of leisure sports industry are the institutional innovation factors, which means that the leisure sports industry should focus on the role of institutional innovation in

promoting the leisure sports industry in the development process, drive the internal innovation of the industry through institutional innovation, cultivate the industrial subjects, stimulate the self-generating ability of the industry, and realize the long-term development of the leisure sports industry.

KEYWORDS: Rural Ecological Environment, Quality Evolution, Rural Liveable Environment, Environmental Qualification

1. INTRODUCTION

In such a general environment, sports as a form of leisure are gradually being paid attention to. The functions and roles of sports in recreation, fitness and wellness have made it an admired form of leisure (Yu et al., 2019). Among them, tourism resources have obvious advantages, and the industrial structure is rich in variety, and the consumer market is full of vitality and significant features, which lays the foundation for the development of the sports industry (Ming et al., 2021). The development of natural resources starts late and the utilization rate is low, the development of leisure sports resources is relatively scattered, the potential resources are still in idle state, there are still some problems in the development and utilization of resources and management, and the development of leisure sports consumer market capital is not enough, resulting in the market. The atmosphere is not strong (Wang TianYue et al., 2019). In the face of such a real situation, it is necessary to study and explore the leisure sports resources of Economic Zone. As a large developing country, China has made significant economic and social progress. From the statistical yearbook released by the National Bureau of Statistics, we can see that during the 12th Five-Year Plan period, the Engel's coefficient of households gradually declined to 30.6%, and the relevant research shows that leisure and recreational consumption activities will occur when the Engel's coefficient is below 65% (Fjortoft, 2001). The consumption structure of urban and rural residents in China has begun to evolve towards developmental and enjoyment-oriented, from a single demand for survival to a comprehensive demand for leisure and entertainment, fitness, and rehabilitation, and from low-level demand to medium and high-level development (Pagán, 2015). Finally, the aging of the population and the increase in the number of holidays will accelerate the arrival of the leisure era. In this environment, theoretical analysis around the topic of the leisure sports is urgently needed, and sports workers should pay attention to and analyse its future development. This paper conducts a comprehensive and systematic study on the resource development of the leisure sports in Economic Zone (Heitzman, 1999). On the one hand, it provides a theoretical reference for the resource development of the sports industry and cultivates it as a new engine for the development of Economic Belt (Borowiak et al., 2010). On the other hand, it identifies the problems in the development of regional leisure and sports industries, proposes corresponding development models and strategies, and builds a general layout of industrial

development in the Economic Belt. At the same time, it also meets the urgent needs of regional people in health and drives the transformation and upgrading of industrial structure. The significance of the theoretical level: First, it is to provide a theoretical reference for the realization of the synergistic development of regional leisure and sports tourism in remote areas with extremely rich resources. There is almost no research involved in the collaborative development of regional leisure and sports tourism in Xishan Mountain as the research object (Kwak & Seo, 2016). Therefore, this study can not only broaden the research on leisure and sports tourism in the Xishan region and the Dobie Mountain region but also supplement and improve the theoretical aspects of it. The featurization of sports industry and the hepatization of leisure industry are the main directions of the development of leisure service industry in China at present, therefore, it is of great practical significance to clarify the boundary of leisure sports industry to promote the development of sports industry and leisure industry in China (Liu, 2018). Based on the industrial ecosystem theory, this paper constructs the theoretical model of leisure sports industry ecosystem, analyses the operation mechanism of leisure sports industry ecosystem, identifies the factors affecting the evolutionary development of the system unity, and uses factor analysis and Harken model to identify the sequential parameters affecting the evolutionary development of China's leisure sports industry ecosystem, which is of great significance for the government to carry out industry planning and policy formulation, and also guides enterprises to carry out It is also important for the government to make industry planning and policy formulation, and for enterprises to guide their production planning and operation practice. This paper applies the industrial ecosystem theory to the study of leisure sports industry, combining theories and methods from multiple disciplines such as evolutionary economics, symbiosis theory, self-organization theory, innovation theory and Harken model to construct a theoretical model of leisure sports industry ecosystem, and theoretically analyse the formation process of leisure sports industry ecosystem and its evolutionary development law from two levels of internal operation system and industrial ecological environment. A relatively novel and systematic theoretical research framework of leisure sports industry is constructed, which further enriches and improves the theoretical system in terms of leisure sports industry.

2. Materials and Methods

Using the inductive method, classification method, deductive method, and other pairs of logical methods, the research is organized and analysed, and based on the basic theories related to the sports industry and economics, the problems of the current stage of resource development research are explored, to summarize and put forward reasonable development ideas and suggestions (WU et al., 2017). As it increases the investment in the sports industry, the leisure sports is developing rapidly at present, and although there is still a big gap compared with the developed regions in the Middle East, it is in the leading

position in the industrial development in the western region (McGuire, 1984). Taking Guangxi as an example, according to the statistical data compiled in Table 1, the regional leisure sports has a complete variety of ownership, ranging from large state-owned and foreign enterprises to small private enterprises (Foudi et al., 2015; Sakellariou-Makrantonaki et al., 2009). The nature of ownership of legal person units 's sports, culture and entertainment industry are the most with private individual households, accounting for 83.11%, which is a large gap compared with other attributes. Collective joint ventures and large foreign-funded enterprises accounted for the least, reaching 0.34%. Large joint venture type enterprises are less and have not yet formed industrial scale.

Table 1: Culture, sports, and entertainment industry business unit type situation.

NAME	QUANTITY	PROPORTION
TOTAL	10000	100%
STATE-RUN	368	3.68%
COLLECTIVE	1254	12.54%
MIXED OWNERSHIP	2589	25.89%
LIMITED LIABILITY COMPANY	3674	36.74%
COMPANY LIMITED BY SHARES	2115	21.15%

First, we should coordinate the resources of ecosystem management, improve the ecological environment quality of the sports town, strengthen the cooperation with domestic and production waste treatment companies, improve the domestic and production waste treatment facilities in the town, and strengthen the waste transfer and comprehensive treatment in the town. At the same time, improve the infrastructure construction of the sewage treatment pipeline network to achieve a reasonable solution to the domestic sewage of all households in the town; secondly, improve the long-term mechanism of ecological protection in the town with sports characteristics and form an institutional guarantee. Develop a system of accountability for ecological damage and ecological compensation system, so that the protection of ecological environment has a law to follow and a reason to find, and at the same time to set up an environmental protection working group for daily management and real-time monitoring. The leisure and sports industry belongs to the tertiary industry, according to the data released, the total turnover of culture-related industries with annual business income above the scale of 5 million yuan in 2015 was 29.035 billion yuan, an increase of 6.14% over the same period, of which 483 million yuan was the business income of leisure and entertainment services, an increase of 9.62% over the same period of the previous year, although the income above the scale accounted for a relatively low, but the formation of A certain momentum of development (Chen, 2020). At the same time, combined with the data published in the Statistical Yearbook, the side reflects that the development of the sports industry in the Economic Zone is mainly individual operation, and the overall scale is relatively small. The survey

results of China Industry Network show that, as of 2016, the highest proportion of sporting goods retail industry is 199, fitness and entertainment industry is the second, and the development of other types is less. Fitness and entertainment industry, this new leisure project, the audience is wide, is the mass of people love popular sports (Chen & Jim, 2008). After the calculations were completed, the cropland data in the HYDE dataset and the journal literature were combined and corrected for comparison. For the data that clearly do not correspond to the productivity of the time (e.g., the arable land per capita in the period of Emperor Yang of the Sui Dynasty was more than three times that in the period of Zhenguan of the Tang Dynasty) For arable land with a percentage of $\geqslant$90% (e.g., in the mid-Tang Dynasty, when the population was highly concentrated in Chang'an City and its surrounding areas), the arable land area in the county (banner, city, district) that exceeded the threshold value was The area of arable land in the county (banner, city, district) that exceeds the threshold is apportioned to neighbouring counties (banner, city, district) based on the area weight. The leisure tourism market is to integrate sports and tourism market (Fourie et al., 2011). Checking tourism network and field observation, the total number of tourists in 2015 was 341 million, up 17.68%, and the total tourism revenue was 325.418 billion yuan, up 25.10%. It indicates that the sports tourism market has the best market base, mainly focusing on the two items of national events tourism and outdoor adventure sports tour. By combining the literature to learn about the competition performance market and venue operation in the Economic Zone (Yang, 2013). Taking Guangxi as an example, in recent years, Nanning and Liuzhou, based on their superior economic level, have made initial attempts in the operation of sports events, new stadium centres, and the creation of a national sports industry base in Pingguo County, among which the Nanning Sports Bureau has raised more than 3 million through market-oriented operation, and has held several international events with regional and novelty, as well as hosting international sports major competitive events on average 5-8 times a year performance events, as shown in Table 2.

Table 2: Recreational Sports Resources.

AREA	RESOURCES
NANNING	Nanhu, Qingxiu Mountain, Liangfeng River, Lion Mountain, Daming Mountain, hiking, mountaineering and other outdoor sports, as well as golf, outreach sports, etc.
LIUZHOU	Sanmenjiang Forest, Queshan, Luzhai Fragrant Bridge, Dalongtan, Dole Rock, Huaguoshan, Ma'anshan, etc.
BAISE	Adventure, hiking, mountaineering, sightseeing, mountain cross-country, karst caves, underground virgin forests, water currents and other landforms, as well as the psychic Grand Canyon, Dawangling Canyon, Luomei Cave, Tiger Cave, etc.

In comparison with the current market economy, Nanning and Liuzhou have the best basis for developing event performance projects (Ma & Wu, 2020). Starting from holding afoot, basketball, volleyball, and other popular and widespread tournament projects using the existing characteristic resources hold leisure sports projects that match the regional characteristic resources and carry out more popular, comprehensive, and fun leisure sports competitions or sports festivals or the like. In the creation of a warm sports competition atmosphere at the same time, improve the city's visibility and competitiveness of the event, show the city's charm (Zheng, 2018). The leisure sports industry ecosystem has self-organization characteristics, and the self-organization theory mainly describes an open nonlinear system, when the control parameters reach a certain threshold, the system can form a new orderly structure under the random rise and fall trigger. In the evolutionary development of a system from disorder to order and from low level to high level, different variables have different degrees of fast and slow influence and different degrees of action. Therefore, in the critical process of system mutation, the state variables affecting the evolutionary development of the system are divided into fast and slow variables, fast variables exist in large numbers and slow variables are only a few, and in the process of system evolutionary development, slow variables will gradually overcome fast variables In the evolutionary development of the system, the slow variables will gradually overcome the fast variables, thus dominating the evolutionary development of the system and becoming the sequential parameter that dominates the evolutionary development of the system, and the sequential parameter will dominate the evolutionary process of the system after it is formed. The Harken model describes this process in mathematical form, uses data to analyse the interrelationship between variables within the system, and identifies the sequential covariates that govern the evolution of the system. Therefore, this paper will use the Harken model to analyse the sequential covariates, i.e., the main factors, that influence the evolutionary development of the ecosystem of the leisure sports industry, and propose policy recommendations to promote the development of the leisure sports industry based on the analysis results. The theory of regional symbiotic development considers symbiotic mode as the form of mutual combination between symbiotic units, which reflects both the way and intensity of the action between symbiotic units and the material, energy, and information interaction between them (Ferretto & Cai, 2020). The numbers, latitude and longitude of the meteorological stations and various meteorological data are sourced from the dataset of daily values of climate information from the Chinese ground-based international exchange stations. For some of the meteorological stations in the selection area with missing data series, nearby stations with more complete data were used for substitution. With the overall development of leisure and sports industry Economic Belt as the goal, based on individual operation, enterprises and local interests, etc., and government coordination and allocation as the elements, the synergistic and cooperative

development of regions, resources, markets, and talents are brought into play, and finally, the regional integrated development of Economic Belt is constructed to realize the sustainable development of regional economy and achieve a symbiotic and multi-win development situation, as shown in Figure 1.

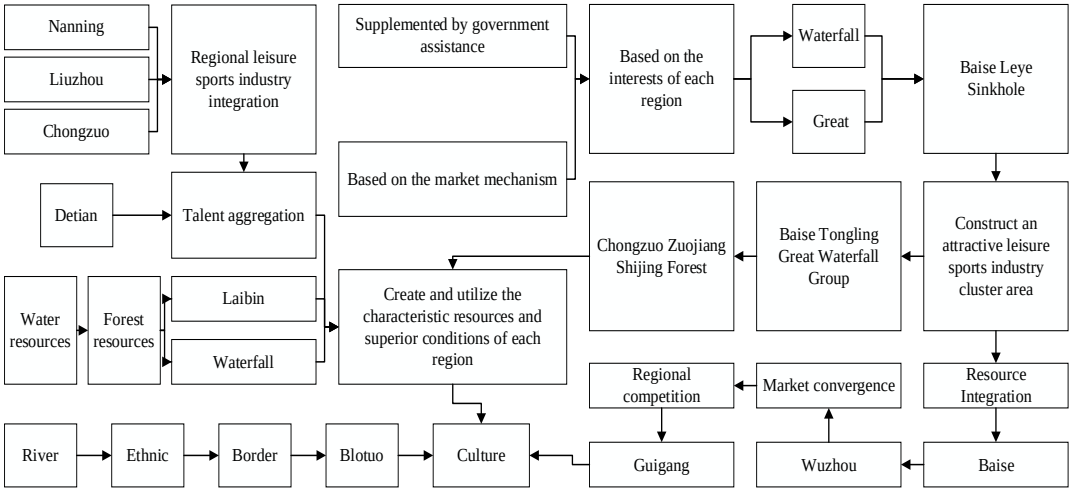

Figure 1: Basic structure of regional competition model of the leisure sports.

First of all, using the location of Chongzuo and Baise near ASEAN countries, the unique karst landforms such as Baise Leye Sinkhole, Chongzuo Zuojiang Shijing Forest, Baise Tongling Great Waterfall Group, Chongzuo Detian Transnational Waterfall, Baise Blotuo, Chongzuo Luo Yue border ethnic culture, this similar resource characteristics to build "Chongzuo - - Baise" regional resource cooperation. Secondly, using Liuzhou's mature economic base and water resources advantages to drive the nearby emerging city of Laibin, to make up for the disadvantages and shortcomings of a weak foundation (Wu et al., 2018). The combination of Liuzhou Liuzhou River and Laibin's Jinxiu Shengtang Lake, hot springs and other water resources, the combination of Liuzhou Dule Rock Dalongtan Geopark and Laibin Wuxuan Baiya Grand Canyon land resources, the combination of Liuzhou Sanjiang Dong and Laibin Yao culture and ethnic culture, the construction of "Liuzhou-Laibin" between the complementary resources and economic mutual assistance (Hu et al., 2021). Referring to the Chenzhou unbalanced coordinated development model, using the growth pole theory, it believed that certain areas with better economic development have a radiating effect on the neighbouring areas and develop into economic growth poles. Through the pioneering development and aggregation and diffusion effect of this region, it drives the common development of adjacent regions. Therefore, the first stage is chosen to focus on the support and construction of Nanning as the core. Referring to the theme development model of Heilongjiang, the key to its development is to seize the unique advantages of ethnic sports activities and natural resources and to shape the brand characteristics. With the characteristics of "highlighting characteristics, brand building, mass

participation, and commercial operation", the brand theme development model of each district is built by considering the actual local resources, taking advantage of the landscape, ethnic culture, international events, and ecological outdoor conditions increasing the marketing and promotion of brand characteristics and tapping new potentials.

3. Results

(1) Influence of Ecological Environment Quality Evolution on Residents' Leisure Sports Activities: In this section, the input and output data of each region from 2010-2020 were brought into the DEA-SBM model, and the static GTFP of the leisure sports ecosystem in China for each year was obtained by using MAXDEA7.0 software, which is shown in Figure 2.

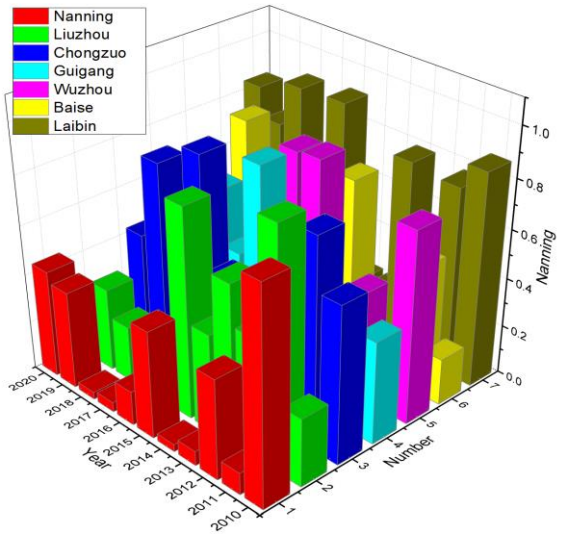

Figure 2: Static green total factor productivity of the sports industry ecosystem.

When the green total factor productivity is 1, it means that the region's leisure sports ecosystem matches inputs and outputs and is in the production frontier surface, i.e., this decision unit is in an effective state; when it is less than 1, it means that the region is not in the production frontier surface, i.e., this decision unit is in an ineffective state. From Figure 2, the green total factor productivity of China's leisure sports ecosystem from 2010 to 2016 is 0.847, which has not reached the effective state and has a gap of 15.3% relative to the frontier surface. Therefore, in the critical process of system mutation, the state variables affecting the evolutionary development of the system are divided into fast variables and slow variables, with many fast variables and only a few slow variables. In the process of system evolutionary development, the slow variables will gradually overcome the fast variables and thus dominate the evolutionary development of the system, becoming the sequential covariates that dominate the evolutionary development of the system. The Harken model describes this process in mathematical form, uses data to analyse the interrelationship between variables within the system, and identifies the

sequential covariates that dominate the evolution of the system. Therefore, this paper will use the Harken model to analyse the sequential covariates, i.e., the main factors, that influence the evolutionary development of the ecosystem of the leisure sports industry, and propose policy recommendations to promote the development of the leisure sports industry based on the analysis results. From the six regions, North China is influenced by government policies, ecological environment, and internal industrial development factors; Northeast and South Central China are influenced by economic development and enterprise scale factors; East China is mainly influenced positively by industrial agglomeration and resource endowment and negatively by market demand; Southwest China is influenced by ecological environment factors and industrial development factors; Northwest China is negatively influenced by government policies, resource endowment, and technology level; and enterprise scale positively influences system efficiency. The Northeast region can develop leisure and sports activities with its unique natural environment to reduce energy consumption and improve green total factor productivity. Shandong and Zhejiang in East China have an efficiency value of 1, while Anhui and Fujian have a lower efficiency value. Overall, the green total factor productivity of China's recreational sports industry ecosystem is low and has not reached an effective state, as shown in Figure 3.

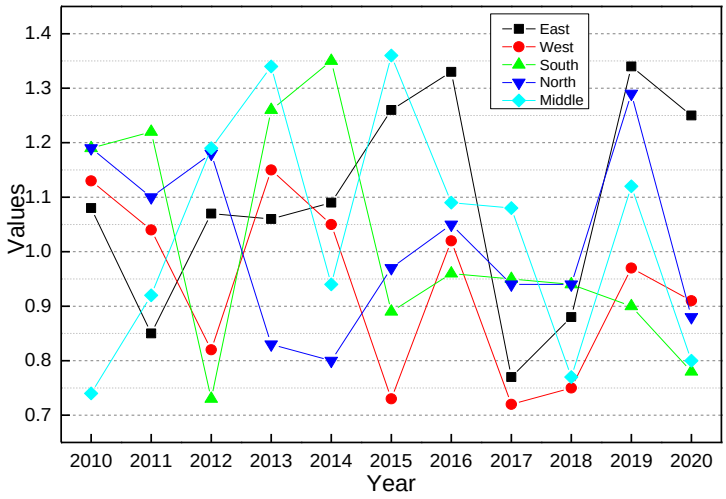

Figure 3: Efficiency measurement results.

From the time series, as shown in Figure 3, the green total factor productivity gradually increases from 2016 to 2020, reaching a seven-year high of 0.873 in 2018, and decreases in the following two years, rising from 0.855 to 0.864 in 2018-2019. overall, the static green total factor productivity of China's leisure sports ecosystem is still in fluctuation, indicating that input-output factors have further room for improvement to reach the optimal state of resource allocation. Comparing traditional total factor productivity with green total factor productivity for analysis, it can be seen from Figure 4 that they show the same growth trend, which indicates that the estimation results of this paper are stable.

This is because the leisure sports ecosystem itself is dependent on environmental factors, and the system has achieved environmentally friendly development in general. As for the annual rate of population change (negative), the negative rate of change can generally reach between -3.35‰ and -36.50‰ in the short term during the warring periods of the alternation of the two Han dynasties, the Three Kingdoms, and the end of the Tang, Song, Yuan, Ming, Qing, and Republican periods. However, unlike the growth rates in stable periods, the sharp population declines in warring periods tend to be concentrated in specific periods of ten to several decades, as the years of warring periods are usually relatively short compared to stable periods. However, due to the limitations of the primary sources, most of the population dispersion points selected in this study span a wide range of years and do not strictly fit the beginning and end of the war-intensive periods of each dynasty, thus indirectly reducing the relative reference significance of the negative values of population change rates among war-intensive periods. As far as the calculation results are concerned, only the negative population growth rates of -36.50‰% and -16.24‰% in the late Sui and Qing dynasties are close to the actual data of the war-intensive period, while the negative annual change rates of the rest of the periods are not analysed in depth here.

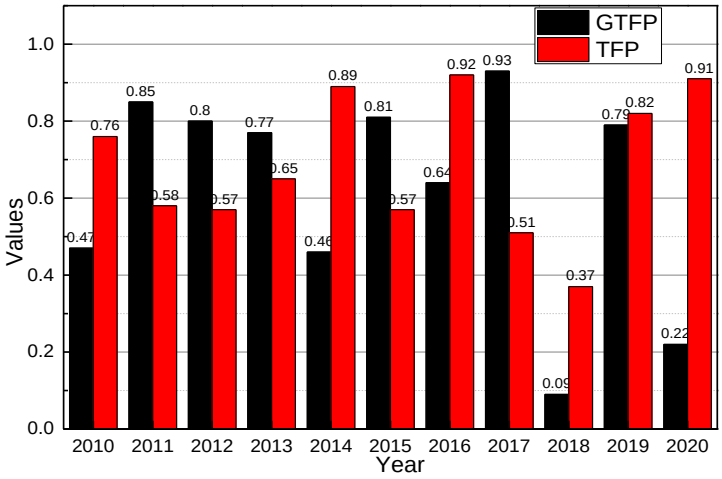

Figure 4: Trend of Traditional Total Factor Productivity and Green Total Factor Productivity.

To realize rural ecological revitalization, it is necessary to practice the development concept of "green mountains are golden mountains", keep the red line of ecological development and build a liveable and beautiful sports town. From the perspective of ecological environment factors, the per capita park green area has a non-significant relationship with the green total factor productivity of the national leisure and sports industry ecosystem, and it only has a negative impact on the southwest region at 1% significance level, indicating that the park environment of consumers has a non-linear relationship with the system efficiency of most regions during the measurement period, and the southwest region should pay attention to the improvement of the park

environment of consumers to meet the demand of people to get close to nature and live in harmony with nature. The coefficient of 0.2666 shows a positive effect on the green total factor productivity of the leisure sports industry ecosystem at the 1% significance level, because tourist attractions provide local people with venues and spaces for outdoor fitness and leisure to meet their diversified leisure needs on the one hand, and form a natural resource advantage for the development of the local leisure sports industry on the other. On the other hand, it forms a natural resource advantage for the development of local leisure sports industry. The development of China's leisure sports ecosystem should continue to play the driving role of pure technical efficiency, develop new models of leisure sports development, and at the same time, optimize the structure of the leisure sports ecosystem and pay attention to the improvement of the overall efficiency of the system by the efficiency of technological progress.

(2) Statistical analysis of data: Convenient public transportation can attract more tourists to visit and consume in the sports town, which is also fundamental to the development of sports town-related industries; and in the infrastructure construction of sports town, good preliminary main plan plays a leading role in the future operation and scale expansion of the town. The perfect degree of sports and leisure facilities is the fundamental to highlight the theme of sports town tour and form distinctive tour characteristics. With the enhancement of people's safety awareness, the provision of safety and security facilities also becomes a necessary condition for the construction of sports towns. The descriptive statistics of the factors influencing the ecosystem efficiency values of the leisure sports mentioned above are shown in Figure 5.

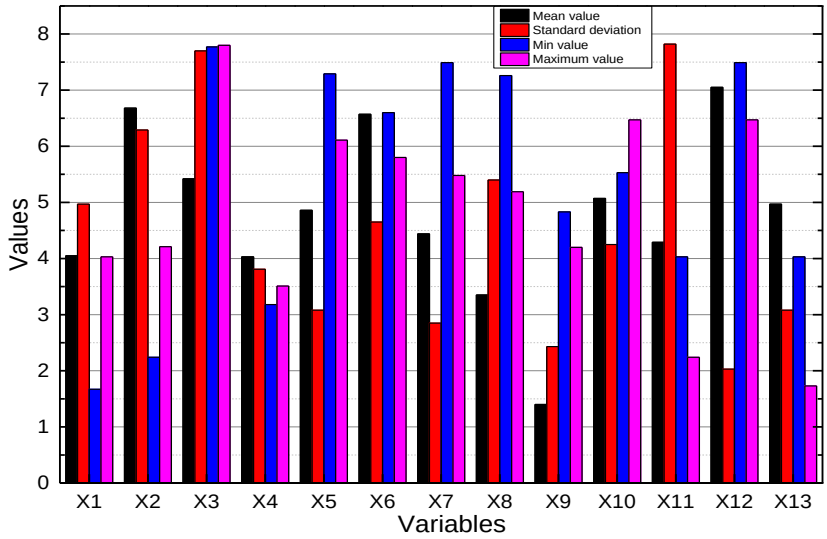

Figure 5: Descriptive statistics of factors influencing the efficiency of the leisure sports ecosystem.

From the descriptive statistical signs of each explanatory variable, some characteristics of the data can be observed, as shown in Figure 5, the sample

size of the panel data is 180. the minimum value of GDP growth rate is -0.27, the maximum value is 0.153, and the standard deviation is small, 0.0522327, which indicates that the level of economic development in each region is small dispersion. The large standard deviation of the amount of actual utilization of foreign investment indicates that the level of opening to the outside world differs significantly among regions. From the feedback of urban residents on the environment of leisure and sports supply, among the very dissatisfied options, the highest percentage of choices for urban outdoor environment (6.5%) and the lowest percentage of choices for safety of leisure and fitness facilities and environment (4.4%); among the very satisfied options, the highest percentage of choices for safety of leisure and fitness facilities and environment (18.4%) and the lowest percentage of choices for barrier-free facilities (Among the very satisfied options, the highest percentage of respondents chose leisure and fitness facilities and environmental safety (18.4%) and the lowest percentage chose barrier-free facilities (16.4%). The mean value reflects that urban residents are the most satisfied with leisure and fitness facilities and environmental safety, and the least satisfied with urban outdoor environment. Under the construction of ecological civilization, although the outdoor environment of the city has been greatly improved, it has not yet reached the ecological picture of blue sky, green mountains and green water, insects and birds chirping that residents expect. Barrier-free facilities are directly related to the travel and leisure and fitness of people with disabilities. The total number of people with disabilities in China exceeds 85 million, which is a disadvantaged group that cannot be ignored, while the current construction of barrier-free facilities in China is not optimistic. Using Stata software, the panel data were imported to analyse the different effects of each influencing factor indicator on the green total factor productivity of the leisure sports ecosystem at the national and six regional levels, using Tobit correlation command statements, and the results of the regression analysis obtained are shown in Table 3, meanwhile, the Hausman test was conducted in this paper, and the results showed that none of the p-values were significant, and the original hypothesis, so the random-effects model was used.

Table 3: Tobit regression analysis results.

TYPE	EAST	WEST	SOUTH	NORTH	MIDDLE
	1.18	4.34	1.21	3.02	5.93
X1	1.71	3.12	3.83	4.65	3.61
	3.85	1.84	1.84	5.61	2.43
	1.32	5.74	3.96	2.48	4.57
X2	2.57	3.51	2.42	4.16	5.24
	5.05	4.4	5.98	2.3	5.18
	4.48	3.35	2.25	5	2.65
X3	5.4	1.4	4.11	1.16	3.1
	3.35	3.28	5.89	4.88	4.21

In terms of economic development factors, GDP growth rate and urbanization level have a significant positive effect on the national green total factor productivity at the 1% level, indicating that the rapid economic development and the increase in urban population are conducive to the improvement of the ecosystem efficiency of the leisure sports during the measurement period. For the township sports characteristic towns, the convenience of public transportation is the most important thing that affects the development of sports characteristic towns. In addition, complete supporting commercial facilities, and information network WIFI coverage also meet the needs of modern consumption, reflecting the development capacity and potential of sports town. The disposable income of residents and the level of external openness show negative effects at the 10% and 5% levels, respectively, which may be attributed to the fact that residents' disposable income does not consume leisure sports activities, while the increase in the level of external openness puts competitive pressure on the domestic leisure sports and fails to promote the improvement of green total factor productivity. From the six regions, the GDP growth rate shows a non-significant effect on the improvement of efficiency, indicating that the growth rate of GNP is not linearly correlated with the efficiency of the leisure sports ecosystem. In terms of the development status of sports town, ecological environment resources are the main support for its development, and the main feature of sports town development under the strategy of rural revitalization. In addition, in the past 20 years, due to the trend of population urbanization, the control of population expansion rate by family planning policy, and the restoration of the subsoil condition by the ecological environmental protection measures such as returning farmland to forest, "Three Norths" protective forest, and horizontal terraces, the degree of sand transport in stage 4 has become more significant recently, especially Since the implementation of the project of returning farmland to forest in 1999, almost all of the sloping land with an inclination angle of 25° or more has been converted to forest and grass, and more than 80% and 60% of the sloping land with an inclination angle of 15-25° and 6-15° have been returned to forest and grass, respectively, while the sediment reduction caused by the construction of terraces has reached 18.6%.7 The land use of human society has become more reasonable, and the relationship between human and land has become more harmonious. The trend of sharply decreasing sand transport in the middle reaches is also becoming increasingly significant.

4. Conclusion

(1) The leisure sports Economic Zone needs to go through a journey from nothing to something, from scattering to agglomeration. Through the analysis, it is concluded that there are favourable conditions such as a rich resource base, complete variety of industrial structure, better location conditions, increasing consumer market, hosting of brand events, and abundant resources in the region. Leisure sports industry ecosystem is an

organic and complex system composed of leisure sports-related enterprises, consumers and the social, economic and natural environments in which they are located within a certain space and time. The efficiency of leisure sports industry ecosystem is the result of coordinated operation among industries in the system and between industries and external environment, which can be subdivided into allocation efficiency, technical efficiency, scale efficiency and ecological efficiency.

(2) In addition, analysing the trends of the two types of population indices, we can find that the rise and fall of the concentration index C is basically consistent with the trend of the stability of the social pattern during the period, i.e., the more stable the social pattern is, the more the population is spatially concentrated in several high development areas, which also confirms the above-mentioned migration law of the population centre of gravity. The supply subsystem is leading and guaranteeing, the demand subsystem is the internal source and driving force, the environment subsystem is supporting and relying, and the operation subsystem is coordinating and driving, and each subsystem interacts and coordinates with each other to jointly promote the virtuous cycle development of urban leisure sports supply and delivery system.

(3) This paper conceptualizes the development of the leisure sports in the region and constructs a regional spatial layout of "one core and three clusters" from point to point. Finally, to promote the development process of the leisure sports, six development measures are proposed: insisting on the market-oriented development path, promoting the group development of leisure sports enterprises; creating a brand marketing promotion strategy featuring leisure tourism; improving various sports market guarantee systems and cultivating professional talents; increasing capital investment and improving regional infrastructure facilities; promoting regional integration and industrial integration, and taking a sustainable development path; and building a regional spatial layout from point to surface. The development road of sustainable development; from point to point, the overall layout, the construction of leisure sports demonstration area.

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