

Comprehensive Evaluation System of University Sports Venue Management based on SWOT and Wavelet Analysis

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Abstract: In this research, we discuss the comprehensive evaluation system of university sports venue management based on SWOT and wavelet analysis. The pretreatment cost of stadiums time resource is mainly to eliminate the cost sharing of information asymmetry. In the market mechanism, the venue time resource utilization is an economic activity, for the purposes of sports venues, the degree of utilization of the venue time resources and income should be proportional to the higher degree of use, the higher the income. Most colleges and universities have relatively abundant resources in addition to stadiums and stadiums. The advantage of university sports stadium resources, for the public, is not comparable to the social sports facilities. In addition, the state has invested long-term funds in the construction of sports facilities in colleges and universities, and most colleges and universities already have well-developed Facilities for stadiums and equipment for sports equipment and equipment, while meeting the needs of teachers and students for physical exercise, there is a certain surplus. Therefore, to enhance the performance of the traditional model this paper proposes the SWOT and wavelet analysis based solution. The mathematical models and the computer based data analysis framework are integrated to construct well performed pipeline of the methodology. The experiment is conducted to validate the performance.

Keywords: Wavelet analysis; Swot; Comprehensive evaluation; University sports; Information management

1. Introduction

As China's social and economic development of the high speed and the state education continues to increase, the school sports work has emerged as a national sports development strategy based and focus. Overall, the current China's most colleges are not yet put into practice sports venues in service management. The college and university sports stadium construction in the main aim is to meet the needs of the students and teachers of physical education needs, its facilities are perfect, and in the construction of a large amount of money, in order to then improve the utilization rate of the college and university sports complex, mitigating the universities and the government's financial pressure, some colleges began to try to open sports venues, the socialized undertakings. With the rapid development of the private economy, the private institutions of a market economy important market players. At the sports complex in the area of operations, with the market economic system reform, the market will become an important resource configuration, private institutions step-by-step has become an important venue operational body, which will give a strong impetus to sports complexes operated by the marketization process in order to promote the venue services and sports industries to

help our sports institutional reform. Before analysis, the table 1 summarizes the core aspects to be considered.

2. The Sports Venue Management and Profit Promotion Essentials

2.1. Sports venue management and profit promotion essentials

2.1.1. Essential reflections

Reinvestment of hardware facilities after revenue generation. In the course of using the stadium, there will inevitably be some losses. In order to improve service levels and benefits, it is necessary to invest the relevant fees and regularly maintain the stadium. Therefore, before we invest in sports venues, the scale is important, it is the sports venues to extend the service life and also reduce losses.

Sports venues management mode optimization. The management mode of the stadium management center has changed the management situation of the stadiums and Gymnasiums in the past, and the management of the venues has become more specialized and intensive. Although the cost of venue management is increased, it can be used more effectively and create social and economic benefits.

Train specialized sports venue management personnel. Schools can recruit through the community, but also can take advantage of the existing physical education teachers, physical education teachers for existing professional training. Schools can introduce sports management experience of professional training of existing staff, strengthen the management of talent, develop a corresponding talent management system, improve the ability of stadiums. In cooperation with the business enterprise has a dedicated financial management, to be able to clearly see the operating results. After all, the enterprise is designed to operate in a more professional than schools to better serve sports venues and the general sports venues.

Venue size and facilities. The college sports venues, the larger the size of its operating efficiency, the better, and the sports complex, the larger the size of the modern sports facilities, the improvement of the health of the environment, the better, and the money is sufficient, the schools pay more attention to the maintenance of sports centers, which is in line with most of the fitness consumer demand.

From the sports venues, resource utilization, and can be split into 0-use status, full use of the state and the part of the state. The zero-use status" refers to the pool of resources is in an idle state, did not yield any economic or social benefits. The full use of the state refers to the resources in this period has been fully optimized use, such as the swimming pool to host communities near the swimming competitions, activities have then been opened from morning to night is closed, in order to let more people enjoy this resource that can damage the social benefits. Socialization is the national sport and the community to then work together to set up sports facilities, and the establishment of a multi-channel financing mechanism to minimize the introduction of the incremental resources and stock resources as well as promoting the health, social groups and individuals to participate in sports, promote the industrialization of sports. From the point of view of economics analysis, the sport socialization refers to the sale of the principles and modalities of the profit on priority position to set up sports facilities. It has both traditional sports players and the wide variety of needs, relevance, meaning, and sports organizers and supplies a wide range of persons, the profitability of new meaning.

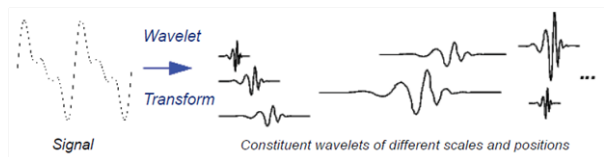


Figure 1. The wavelet structures

3. The Proposed Methodology

3.1. The wavelet analysis overview

The ultra-small wave is unique in that it addresses the multiplicity of signals with a wave of advantages, such as in the data compression, when the same data, ultra-small wave can not only multiple signals at the general same time compressed and the compression ratio than the usual small wave height. It can be seen that the ultra-wavelet is an important research direction for the development of wavelet analysis theory in recent years and has attracted widespread attention at home and abroad. In recent years, although some important results have been obtained on the extension of the standard tight frame wavelet into a super-wavelet, the sufficient and necessary conditions for the extension of the standard tight-frame wavelet to the super-wavelet are still an open question, and some important aspects of the super-wavelet are also open. It can be expected that its development will have an important impact on the theory and application of wavelet.

$$f(t) = \sum_m \sum_n d_{m,n} \psi_{m,n}(t) \tag{1}$$

$$\psi_{Haar}(t) = \begin{cases} 1 & \text{for } 0 < t < 0.5 \\ -1 & \text{for } 0.5 < t < 1 \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

As shown in the above formulas, the wavelet transform is presented. Wavelet is considered to be the earliest embodiment of wavelet analysis, which characterizes the local characteristics of basic signal from the perspective of time domain and frequency domain respectively. From the point of view of signal analysis, two kinds of wavelet are two extreme cases. The former has strong localization ability in time domain, but poor localization ability in frequency domain and the latter is just opposite. Besides, we can also summarize the features of the wavelet as the follows. The information expression with multiscale resolution analysis can be obtained by changing the scale to better understand the core multiresolution decomposition in the characteristic frequency domain of the signal. As a result of the orthogonal measure function in the time domain and frequency domain are tight and measure the changing sectoral transformation to better than even the great signal-to-noise ratio, we can then also get some higher recognition accuracy. The wavelet synthetic filter is used to integrate the approximation models of each frequency band. The transfer function estimation is obtained to adjust the frequency function, that is, to adjust the frequency division function, that is, to then adjust the bandwidth of the basic frequency band, which can obtain more accurate estimation. The method provides more choice freedom compared with the single model approximation.

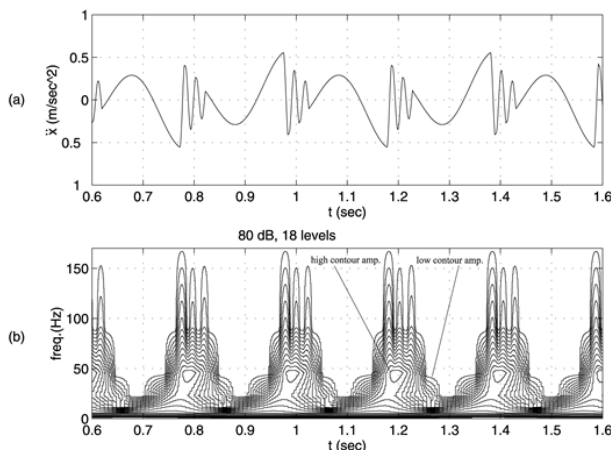


Figure 2. The simulated wavelet information system

The effective implementation of embedded wavelet coding algorithm should solve two key problems: how to sort and code the wavelet coefficients according to importance, and imply the position of the important wavelet coefficients that encode the sparse distribution; how to implement the progressive coding of the important coefficients. It is a good choice for the problem as the bit plane coding method. The exact rate or distortion control can be achieved by encoding from the bright position of the coefficient amplitude to a particular location. It can be also seen that the core idea is to realize the implicit coding of the sparsely distributed tomb coefficient positions through layer-by-layer scanning of the hierarchical tree, and to use the root node to predict the magnitude of its descendant coefficient by defining zero in the sense of threshold. Therefore, in the following sections, we will apply this feature to construct the proposed methodology.

3.2. Sports assessment with the SWOT analysis

As the sports development and sports organizations are also increasing, whether for-profit or non-profit sports organizations are a new trend. Sports private non-enterprise units gradually increased, the provision of public services to GDP is growing, the fitness quality also had some impact, on the other hand, also, to a certain extent, affected the public's amateur cultural quality of life, and the visible sports private non-enterprise units for the role. The existing complex evaluation and research are focused on the construction of the venues and facilities, such as the use of small quantities of research, simply place the site area and the per capita use of the area as the venue for the assessment indicators, to the neglect of the venues used in the proportion of students physical exercise, which does not have the facilities after the construction of the practical assessment work in strategic locations.



Figure 3. The swot analysis framework

The evaluation standard of the equalization of the sports public service is divided into three aspects: the fact stan-

dard, the efficiency standard and the value standard. The fact standard of the equalization evaluation of sports pub-

lic service mainly refers to a backtracking evaluation standard. It mainly refers to the equalization of sports public service after the implementation of a series of sports public service equalization policies as contribution. Therefore, for evaluation, listed aspects should be considered.

4. The Sports Assessment with the SWOT Analysis Considering Aspects

4.1. Sports assessment with the SWOT analysis considering aspects

4.1.1. Aspect reflections

To assess the enhancement of competitiveness. In a fully competitive market, consumers of services at the same time, faced with multiple offers of products and services from the public sector, enterprises, and other non-profit organizations, but also to provide the same kind of products and services is also likely to have a variety of non-profit organizations, if the provision of products and services quality is too low, then the consumer will not select. Adult sport teaching is to adult to exercise self-interests, to develop their physical and mental health awareness in order to increase the capacity of the independent physical exercise, a good sporting behavior. Teaching is of a special and its quality assessment system is more complex, the indicator system design should also be adapted to the multi-dimensional, dynamic characteristics.

To assess and publicize information to enhance public trust. Established evaluation system, including evaluation subject, evaluation process, evaluation and indicators, assessment period, the framework of evaluation, evaluation criteria and scoring rules, etc.), you can choose the internal review, the official assessment, expert assessment and so on, do it in the evaluation of promoting construction, to information publicity to promote organization to interact with consumers, and strive to improve the credibility of the general public. The key to the assessment of the stadiums and stadiums is to select the appropriate evaluation criteria, evaluate the allocation and utilization of the stadiums and gymnasiums to meet the needs of the students' physical fitness exercises, and make the evaluation results truly and effectively reflect the distribution of the resources of the gymnasiums and stadiums in universities, and in view of the characteristics of the universities' teaching needs, the gymnasiums should be considered to meet the teaching. The main purpose of this demand is to put forward reasonable suggestions for stadiums for general students' physical fitness exercise.

The evaluation procedure plays an important role in the equalization assessment of the sports public services. The evaluation procedure of equalization of sports public service can be divided into three stages: pre-evaluation, in-process evaluation and post-evaluation. As for our

proposed methodology, the SWOT should be well considered. The SWOT has been widely used in a number of areas as a strategic management and competitiveness analysis tools as the analysis method is also applied to cultural field. For the analysis of the cultural sphere is the SWOT analysis method from the micro level to the macro-strategic level, so for national traditions, culture, sports, with the SWOT analysis to gain insight into their own some deep-seated problems and to take advantage of the traditional ethnic sports development patterns and characteristics to sort out in the course of development of the advantages and shortcomings, the formulation of development strategies. Therefore, to establish a dedicated sun sports research results service agencies. We must take full advantage of the high-level talent of the school sports research resources, innovative more scientific, human-oriented sports and fitness methods and fitness content, research and development of low-cost, easy to apply fitness products, regular students physique health test. Accordingly, the analysis is summarized as the following aspects.

Opportunities for development. The sports industry vocational skills identification to possess a core sports professional knowledge skills with a capacity certification, accreditation standards and provide direct access to the relevant jobs opportunities on the one hand, and the need to strengthen cooperation with the sports industry-related knowledge and skills in the field of systematic increase of the personnel with professional guidance and training, and also improve the quality of qualified personnel. Increasing income levels, increasing the awareness of the basic sports consumer demand that is involved in the field of sport consumption has spread, which is promoting the steady development of the sport.

Threats in development. Sports industry is an industry with broad development prospects. It is not only getting more and more attention in China, but also getting more and more attention in other countries. Especially in some developed countries, not only on the sports fitness leisure and sports performance has great advantages, and in the design and the organization of sports products sporting events also have certain competitiveness. Comprehensively improving the overall knowledge and skills of the sports industry practitioners is an important task given by the state to the sports sector. Through the identification and evaluation of the professional skills of practitioners in the sports industry, it provides standardized guidelines and indicators for quantifying level of professional skills of practitioners in sports and provides guarantee for the development of health and safety of the masses in the sports and fitness industry.

Major advantages of industrial development. The living standards of our people have gradually improved, and the economy has then also achieved unprecedented development. Especially in some of the first-tier and second-

tier cities in China, the demand for sports industry products has increased year by year. It can be then seen that the domestic sports industry has considerable development prospects. This prompted the mass sports, sports fitness entertainment industry, as well as rapid development of sports tourism and sports industry, sports professional needs to require more specialized professionals involved in these areas and also promotes the healthy development of these areas.

The disadvantage of the development of the sports industry. Physical education student is to become the physical education teachers, social sports students want to be able to enter the club, fitness facilities at the distinction between professional too obvious, teachers also have to be given more guidance and promotion. Only like swimming such a high-risk project file that must be in possession of a swim coach and lifeguard certification before appointment, so for the vocational skills identification of publicity, the expansion of propaganda to let the public and the relevant specific staff a better understanding of the vocational skills identification and understanding.

4.2. Finalized comprehensive evaluation system of university sports venue management

The stadia regardless of the quantity, condition and location of the national sports venues in the greater benefits as promoting the high school sports venues open to the public, will contribute greatly to resolve the current sports complexes, the promotion of social contradiction between the supply of and demand for sports development, as well as institutions of higher learning for social and economic double-benefit. The college and university sports venues, if their use is limited to teachers and students in colleges and universities, even if the cost is the cost of service charges, its products are non-competitive and inclusive. It should be part of the public nature of the product. But if you will be using to open to the public, due to the nature of the use of object changes, whether or not the fees and charges and how the charges. It should be divided into two cases, the venue of the marginal cost as a measure of the indicators at the marginal cost is not high, through the national fiscal expenditure is dependent, free to the public sports venues, their nature or to the public. At the marginal cost is too high, a limited number of non-competitive or limited, non-exclusive public products, that is, the quasi-public goods. Based on the review, we summarize the following challenges that should be dealt with. (1) Because the specification conveys the most basic design requirements, the compliance of the building is not equal to the optimal design, moreover, the existing sports building design specification is not perfect, often lags behind the change of competition rules, if not keep up with the development trend of sports practice and sports competition, blindly plucked the building specification indicators, will lead to build the

stadium difficult to meet the needs of sports development. Therefore, only do the architectural design standards and physical education requirements and sports competition rules mastery, in order to design a high-quality Stadium in line with the actual development of modern universities. (2) University gymnasium is basketball, volleyball, table tennis, badminton, tennis, gym and mixing gymnastics room decorate, and these sports in size of the field, ground, ceiling height, buffer material is different on key points, such as the general standard. Therefore, even if the design specification states the general use of the venue, the designer should fully anticipate future functional expansion to then ensure the universality of the venue. However, in the actual design, the designer's focus is often limited to the design of the main body of the building, so that the stadium has no major flaws in the main functions and streamlines, but in sports technology design is not considered. (3) The college sports complex is not a professional management talent. At present, although some colleges and universities in the school's sports venues for operation and management of institution, but according to the survey, management agencies, although many, however, the agency does not have a professional management talents, is the school's physical education teachers or from the recruitment of personnel who are not trained to basic sports venues run professional training, doing nothing and does not know how to operate sports venues and the overall professional quality needs to be improved.

Therefore, we also propose the following suggestions. The operation of the university sports venues should be in line with international standards. With the development of the global economic integration, China's more cities toward the direction of the International metropolis, the international exchanges are becoming more frequent. Therefore, in order to improve the operating efficiency of university sports venues, the operation and management of universities and stadiums should be oriented to the world, keeping abreast of the internationalization trend, drawing on the advanced management philosophy of some foreign countries, integrating into the globalization tide, actively form an operation team with an international vision, and try to keep pace with the internationalization as much as possible in the management and the operation mode of stadiums. Regular surveys should be conducted on the users who were consuming in stadiums, and their opinions on the operation of modern stadiums were regularly understood. The related service facilities were improved in a timely manner to improve the stickiness of users and further enhance the operating efficiency of stadiums.

5. Conclusion

In this research, we discuss the comprehensive evaluation system of university sports venue management based on

SWOT and wavelet analysis. The construction and development of stadiums plays a very important role in promoting the development of the entire sports industry in China. Sports venues are divided into indoor sports stadiums and outdoor sports stadiums, it is running, fitness, exercise place, if its rational development, can comprehensively improve the physical fitness of our national. Under the market mechanism, the utilization of the stadium time has been given a new meaning that compared to the current situation of the stadium's striding, the utilization of the stadium resources at the same time segment and the same space should become a fully market-oriented activities, so that the public has more space for the activities of the stadium resource owners the obligation, but also the contribution of the sports venues to the independent existence of society, but also for their own salvation, will have great social and economic benefits. We believe the paper will also provide the novel understanding of the related subjects that will then promote the further development and the analysis.

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