



# Stadium Construction Project of Anyang City Cultural and Sports Center PPP Mode Analysis and Risk Management Evaluation

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**Abstract:** This study is mainly applied to the early decision-making stage of PPP project cooperation in Anyang Sports Center, with the ultimate goal of making a reasonable benefit distribution scheme, and to provide a reference basis for the decision-making of the government which dominates the benefit distribution, since the annual benefits and expenses measured by the cost-benefit analysis method are finally converted to present value and reflected by the total income of each party's interests, this article does not distinguish the specific operation mode from the overall concept of PPP project cooperation. Therefore, I hope that through the research of this paper, we can provide theoretical reference for the benefit distribution and risk identification of Anyang Sports Center, stadium has played a role in the construction and operation of large scale projects in China and underdeveloped regions.

**Keywords:** Cultural and Sports Center; PPP; Mode Analysis; Evaluation

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## 1. Research background

The current research on the construction management and follow-up use of large-scale sports stadiums has always been a difficult problem for the world's sports managers. The hosting of large-scale events has played an extremely important role in the development of countries and cities. More and more participants in the event, scale It is getting bigger and bigger. At the same time, it also puts strict requirements on the basic conditions and comprehensive strength of the venue. Although some cities already have experience in hosting large-scale events, a large number of infrastructure and stadium projects have been established. However, due to the increase in the number of participants, the scale of the event is also growing, and the previously built sports facilities can no longer meet the needs of large-scale sports events. Therefore, after many cities have acquired the right to host large-scale sports events, they have invested huge amounts of material and financial resources to build and expand many large-scale sports venues and infrastructure projects, bringing huge economic and social benefits to the organizers. This also has a negative impact. The simplification of the venue's functions has made the actual utilization rate of the stadiums low, and some stadiums have even been idle. The social benefits of the venues are not only not realized, but also difficult to produce good economic benefits. As the level of competition in large-scale events continues to increase, athletes have higher requirements for the facilities and functions of sports venues, and put forward more stringent requirements for the construction of large-scale sports stadiums. Under this trend, this paper draws on the successful experience of building a large stadium in the PPP mode, and proposes the analysis and risk assessment of the PPP model for the construction of large stadiums, which enables large stadiums to operate normally and effectively, and generate economic benefits and reduce government expenditure. . Although there are many research papers on project risk management, compared with foreign countries, research on risk management for large stadiums is still relatively rare. Therefore, this paper takes the PPP construction project of Anyang City Cultural and Sports Center as the research object, combined with the actual situation of Anyang City, in order to provide the relevant theoretical opinions for decision makers through the research of this paper, for the construction of China's large stadiums and projects. Sustainable development plays a certain role in reference.

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doi: 10.18282/le.v10i2.

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## 2. Significance of research purposes

### 2.1 Research purposes

The purpose of this paper is to study and learn from the theory and experience of successful large-scale sports venues at home and abroad, combined with the current development status of large-scale sports stadiums in China, and put forward the problems existing in large-scale sports stadiums in China. Through theoretical research on PPP models, the PPP is clarified. The concept, classification, and application conditions of the model. And by exploring the risks of large stadiums under the PPP model, researching and analyzing this model, combined with the risk problems existing in the development and operation of large-scale sports stadiums in China, aims to summarize a set of suitable for sports venues. Its own risk assessment system. Through this evaluation system, a comprehensive evaluation of large-scale sports stadium projects will be provided to provide effective decision-making theoretical basis for developers, investors, and operators of large-scale sports stadiums, thereby reducing the risks of such projects and reducing the effects of economic losses. Some suggestions and references can be made for the research on risk management of large stadiums.

### 2.2 Research significance

The significance of this paper is to analyze the risks existing in China's large stadiums based on the PPP model. Fundamentally, it analyzes and summarizes the changes in various factors affecting the construction of large stadiums and the impact of these factors on the benefits of large stadiums. The feasibility of evaluating the results of the development and operation of large stadiums based on the PPP model to assess the risk of the project; determining the potential risks of large stadium construction projects under the PPP model, fully recognizing the development and operation of the stadium. The factors that change the effect are strictly controlled to avoid the low economic efficiency of large stadiums and minimize unnecessary economic losses.

## 3. Research objectives

At present, the theoretical research on large-scale sports stadiums in China is relatively backward. The purpose of this paper is to explain the current situation of theoretical research on the financing mode of sports venues at home and abroad, and draw on advanced theoretical research from abroad to better serve the construction and development of large-scale sports stadiums in China. Foreign theoretical research on the PPP model has formed a stable and mature mechanism, which plays a key role in the practical application of the PPP model. R. Scott Fosler Renee, A. Berger<sup>[1]</sup> proposed that the construction of large-scale projects should be based on the natural attributes and structural characteristics of the city where the project is located, and the public-private partnership model should be chosen according to local conditions. Peter Moles, Geoffrey Williams<sup>[2]</sup>, through a risk analysis of specific PPP projects, identifies the main risks that each participant has in the project. The risk of the government sector is mainly whether the expected rate of return can be achieved, and the private sector is The risk is whether you can get good economic benefits. Patrick. T. Lam<sup>[3]</sup> studies the main risks and risks associated with PPP projects

Treatment measures. It is advocated that the reasonable sharing of risks is an important measure for risk response. At the same time, it is proposed that effective risk management is the key to the success of PPP projects. Qi Jianxiang<sup>[4]</sup> The Beijing Olympic Games venue project adopts the PPP model. The Olympic venues and their affiliated sports facilities are built to determine the owners through international bidding. The owners determine the investment, financing, construction and operation of the entire project. The Olympic venues and affiliated sports facilities projects can achieve certain positive effects by adopting legal tenders. Social capital participates in the construction of the Olympic project and reduces the operational risks of the government. Liu Zhiqiang and Guo Caiyun<sup>[5]</sup> studied and analyzed the risks of the PPP financing model and proposed the implementation of the PPP financing model in China's infrastructure construction projects.

The number of large-scale sports venues is increasing and the number is huge, which has greatly increased the pressure on the government. If it is only unilaterally relying on the government's fiscal expenditure, it is still difficult to meet the construction needs of such projects. Moreover, the efficiency of the government's large investment is low, and this is

also a problem worldwide. This led to the research hypothesis that the construction of large-scale stadiums and projects will introduce new financing models to more effectively utilize the social benefits of public infrastructure and reduce risks.

## 4. Research methods and ideas

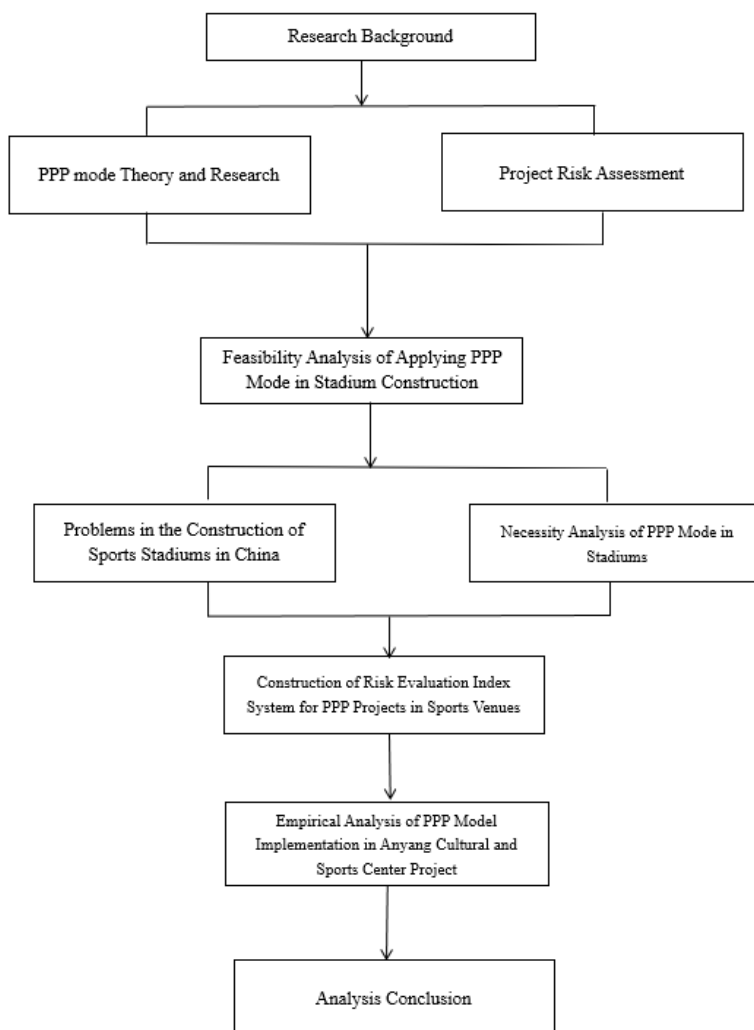
This paper mainly adopts the analytic hierarchy process and fuzzy comprehensive evaluation method, combines the advantages of the two methods, and combines qualitative and quantitative research to more effectively evaluate the risk of China's large stadiums under the PPP model.

### 4.1 Research methods

(1) Fuzzy comprehensive evaluation method is a method in fuzzy mathematics, which is widely used because it can effectively solve the comprehensive evaluation problem affected by multi-factor constraints. It mainly uses the fuzzy comprehensive evaluation model to solve the economic phenomenon with a lot of ambiguity in reality, and combines quantitative and qualitative, which can overcome the subjectivity of qualitative and compensate for the limitation of quantitative. It is a theory suitable for effective evaluation of enterprises. method

(2) The analytic hierarchy process is to decompose complex problems affected by many factors into multiple targets or criteria according to certain rules, and then hierarchically target them. Through the qualitative quantitative fuzzy method, the various related factors are compared layer by layer. The relative importance weight value of a certain factor in the upper layer is used to calculate the hierarchical single order and total sorting, which is a systematic method for optimal decision making in multiple schemes and multiple indicators.

### 4.2 Research map



## 5. Conclusion

In summary, it can be concluded that foreign scholars have formed a relatively complete system for studying the concept and basic form of PPP model, business process and the qualitative and quantitative research on risk, and have drawn a relatively uniform principle of risk bearing, it provides a good theoretical basis and basis for the further research in this field in China. At the present stage, our country is also continuing to research and explore the risk sharing of PPP financing, most of which still involve basic research, and there is almost no research on the risk sharing model and the income sharing model of PPP financing for large-scale sports projects, stadium is a global problem.

## References

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1. Fosler RS, Berger RA. Public-private partnership in American cities. *Seven Case Studies* 1992; (2): 243–244.
2. Williams PMG. Privately funded infrastructure in the UK: Partici Pants. *Risk in the SKYE Bridge Project Transport Policy* 1999; 2(2): 129–134.
3. Lam PTI. A sectoral review of risks associated with major infrastructure. *International Journal of Project Management* 1999; 17(2): 77–87.
4. Qi JX. The basic characteristics and institutional assumptions of the reform of public sports stadiums in China. *Journal of Tianjin Institute of Physical Education* 2007; (6): 13–17.
5. Liu ZQ, Guo CY. Discussion on the introduction of PPP financing methods in infrastructure construction projects. *Construction Economy* 2005; (6): 40–42.