Research on Risk Management of a Road Construction Project under PPP Mode

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Abstract

In recent years, there have been many PPP financing projects in China, and PPP model has been applied in various industries and projects. On the one hand, PPP models have positive effects such as revitalizing social capital and stimulating market vitality; On the other hand, PPP mode still has some limitations that need to be improved. X City has actively applied PPP mode in the field of road construction and achieved certain results. However, there is still a lack of systematic research and summary analysis on risk management. Therefore, this paper makes an in-depth study on the risk management of a road construction project in X city. Based on theoretical analysis, combined with the advantages and limitations of PPP model itself, it finally puts forward several measures and suggestions to jointly put forward new ideas for the construction of highway traffic facilities in X city.

Keywords

PPP mode, Road construction, Risk management system, Application prospect

Introduction

Road construction is an important basic support for national economic and social development. China has always attached great importance to the construction of highway traffic infrastructure and made efforts to provide convenience for production and life. However, the project of highway traffic facilities construction has a large amount of capital investment and a long construction period, which often brings great pressure to the local government's finance. In recent years, many local governments have begun to explore new forms to promote infrastructure construction and operation. The PPP model has become a new alternative because it can attract more social capital. PPP mode is more in line with the development requirements of the new situation than previous construction schemes. In recent years, PPP model has been continuously developed and applied in China's infrastructure construction and has shown good results and development trend. But this does not mean that the PPP model is foolproof. In fact, the PPP model is a cooperative project between the government and social capital. In the process of implementing the model, the affordability of local finance must be considered to ensure the smooth operation of the PPP model. To better improve the PPP model, it is necessary to further carry out the risk management of road construction projects under PPP model and play a better role in the field of highway transportation infrastructure construction in China [1].

At present, the research and application of PPP mode in China are deepening, and the combination with the field of highway transportation infrastructure construction has also created new economic benefits for China. In fact, the government still plays an important role in the PPP model. The difference is the transformation of functions, from overall planning to planning and supervision [2]. In recent years, a road in X city has been carried out in PPP mode from planning, investment to construction and operation. In this process, there are both achievements and limitations. Among them, the risk management of the project is

a new challenge. Whether it is risk identification, risk assessment, risk sharing or risk response, it needs comprehensive risk management to promote the smooth landing and sustainable development of the project in all directions and dimensions [3]. Aiming at the problem of risk management in a road construction project under the PPP mode in X city, this paper is based on the basic theory of risk management for PPP financing projects. It conducts a concrete analysis from the perspectives of government, social capital, and the external environment. Finally, the paper proposes relevant suggestions, aiming to provide new ideas for road construction projects in X city and support the effective application of the PPP mode.

Project overview

This road is an important link in the construction of traffic network in X city in recent years, which is of practical significance to solve the problems of large traffic volume and low highway technical standards in X city and can further expand to the coastal economic hinterland. Under the PPP mode, the operation of the road construction project adopts the BOT mode. Through social capital, the relevant project company is granted a certain franchise, which is responsible for a series of work such as investment and financing, operation and maintenance, and construction, while the government assists in quality supervision and plays an important role in stabilizing the overall situation. Under this model, the ownership structure and asset ownership have changed accordingly [4,5]. Although the planned route of the project is long, and many bridges and tunnels are connected, and the construction amount is large, all the projects have been successfully completed and put into use so far [6].

Figure 1. Achievements of road construction in PPP project in X city.

Project risk management

Risk identification

Risk identification is the basic work of the whole risk management system. Through case analysis and other methods, certain risks are identified in the whole project development process, including government supervision, enterprise interests and the external environment of the project. Combined with the experience of road construction in X city, the government audit will bring certain risks to PPP financing projects. Secondly, the affordability of government finance should be considered. Finally, the running of communication between the government and the company is the embodiment of comprehensive risks. In terms of enterprise interests, we should consider the contradiction between government and enterprise interests, management risks and contract risks. The external environmental risks of the project are more complicated, and the changes in the financial market have a greater impact on the PPP model.

Risk assessment

After risk identification, it is necessary to make a risk assessment of the whole project. The results of risk evaluation can be obtained by issuing

questionnaires to experts. After the survey content is integrated, it includes risk category, risk occurrence probability, hazard degree and risk degree, and all indicators are relative. However, the risk matrix can be further drawn through the risk evaluation table, so that the risk evaluation can be more intuitive.

Risk sharing

Under the PPP model, the main body of risk sharing of road construction projects is diversified, including government, social capital and construction unit. In addition, the whole process will involve operators, guarantors and other third parties from project planning to landing. However, this paper focuses on the government, social capital and construction units for key analysis.

The government must bear most of the risks during the operation of the project, not only because the government will bring many risks, but also because the government has a higher ability to cope with risks.

The smooth operation of PPP model is inseparable from the help of the government. The government is the authorizer of the project franchise and has a certain ability to control the macro-economy. Compared with other subjects, the government can provide more preferential policies and subsidies for public infrastructure construction projects like roads. As shown in Table 1.

Table 1. Responsibilities and rights of risk sharing parties.

Serial number	Risk category	Subject confirmation	Distribution of responsibilities and rights
1	Financial sustainability risk	Government	Government's sole responsibility
2	Risk of conflict of interests between government and enterprises	Government	Government's sole responsibility
3	Safety accident risk	Social capita	All liabilities are assumed by social capital
4	Quality risk	Social capita	All liabilities are assumed by social capital
5	Legal and regulatory risks	Government	Government commitment part
6	Uncontrollable force risk	Both sides	Shared

Although social capital also brings many risks, its ability to take risks is not as good as that of the government. However, the risk of safety accidents and quality risks in the process of project construction must be borne by social capital. As an important part of public-private partnership, it will inevitably have some contradictions with the government, but social capital should try its best to share risks on the premise of ensuring the right direction.

The construction unit entrusted by PPP project undertakes most of the responsibilities in the specific operation process, so the construction cost and environmental risk control should also be borne by the construction unit.

After defining the subject of risk sharing, we can gradually build a project risk sharing framework, analyze the factors affecting risk sharing in detail, and finally get a risk sharing allocation scheme. X city made a preliminary risk sharing plan before the road construction project started.

Advantages and limitations of risk management

This paper combs the specific content of risk management of a road construction project in X city under PPP mode, and it is not difficult to find that the road construction project has achieved certain results after using PPP mode, but there are still some limitations [7,8]. For example, there are not enough risk categories, and the distribution of risk sharing between government and social capital is not detailed and orderly enough, so it cannot be flexibly changed with the changes of the project. Therefore, in view of these limitations, several measures and suggestions will be put forward next.

Countermeasures

The government should implement the PPP compliance procedures

Only when the compliance procedures of PPP projects are complete can we promote the smooth landing of the projects. Compliance procedures are the premise for the government to arrange expenses through the financial budget. The operation of the project cannot rely solely on financial institutions. Therefore, if the road construction projects under PPP mode want to operate smoothly, the government should strictly examine the authenticity and integrity of the warehousing data of PPP projects in accordance with relevant regulations and protect the legitimate rights and interests of social capitalists based on objectively evaluating their financial affordability [9].

Innovative social capital investment mechanism and structure

Under the market economy, PPP mode activates the enthusiasm of social capital and plays an important role. Using company cooperation provides broader development prospects for social capital. The government must recognize the importance of social capital, while further encouraging social capital parties to actively participate in infrastructure projects and innovate investment mechanisms and structures. A transparent investment information system will also be established to guide social capital in making reasonable investments and realizing efficient, economical, and fair road construction project operations [10].

Pay attention to the assessment and sharing of external environmental risks

The risks of the external environment change rapidly and fluctuate constantly. The government, social capital and the construction unit should work together to deal with external environmental risks, including financing risks, changes in laws and regulations and force majeure risks. We should step up the construction of tripartite coordination mechanism, strengthen communication and cooperation, and strive to resolve the adverse impact of external environmental risks on the project.

Conclusion

Through the in-depth analysis of PPP mode and highway traffic infrastructure construction projects, it is not difficult to find that PPP mode has unique advantages, which not only play the flexibility of social capital, but also play the role of government supervision and control.

However, since the PPP model is currently in a development stage and its content is complex and diverse, there is still a long way to go in the future. Therefore, this paper puts forward some suggestions based on theory and practice to provide effective reference for the operation of road construction projects under PPP mode.

Funding

This work was not supported by any funds.

Acknowledgements

The authors would like to show sincere thanks to those techniques who have contributed to this research.

Conflicts of Interest

The authors declare no conflict of interest.

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