



Factors Affecting the Success of PPP Transport Projects in Vietnam

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Abstract: Transport infrastructure plays an important role in the development of each country, especially for developing countries like Vietnam. To promote the development of transport infrastructure as well as to deal with some challenges such as budget and project efficiency, the Public Private Partnership (PPP) model is a very proper choice. The factors that determine the success of PPP transport projects are important issues to be analyzed in different countries. The article aims at identifying the factors and the extent of their influence on the success of PPP transport project in Vietnam. Research data are collected from surveys with questionnaire to capture related partners' perceptions of success factors. The influence level of the factors is assessed on a 5-point Likert scale (from 1 - very low to 5 - very high). A total of 92 questionnaires were collected and analyzed using Statistical Package for the Social Sciences (SPSS) software to rank the influence of success factors. Research results show that "Adequate and transparent legal framework", "State and private commitments and responsibilities", "Transparency in bidding", "State support policy" and "Good governance" are the top five factors determining the success of a PPP transport project in Vietnam. The new findings of the study help the State and investors better understand the factors determining the success of PPP transport projects in Vietnam in order to make appropriate decisions on policies.

Keywords: Private sector, public private partnership, success factors, transport infrastructure projects

1. Introduction

Investment in the development of the transport infrastructure system is an important requirement for the economic and social development of each country. Vietnam is currently facing a huge challenge in mobilizing investment capital to develop the transport infrastructure system to meet the country's socio-economic development goals. The Vietnamese government has used certain resources to meet the most basic needs.

The demand for investment capital to develop transport infrastructure is highly increasing. While the state budget is limited, the capital donated by donors is increasingly tightened, the investment model in the form of Public Private Partnership is considered as an effective tool to mobilize resources from the private sector both domestically and internationally for investment in the development of transport infrastructure in the current situation.

Investment in the form of Public Private Partnership is an investment method made on the basis of definite term cooperation between the State and private investors through the signing and performance of PPP project contracts in order to attract private investors to participate in PPP projects.

In a Public Private Partnership, the private sector can participate in any or all stages such as the design, financing, construction and operation of a public utility service, infrastructure. Furthermore, PPP also promotes financial diversification from the perspective of the private sector. They are looking for business opportunities to seek better

profits (Lee, 2020). The government should focus on public spending and investment for low and middle income households because their contribution is very important to economic growth. This means that the involvement of the private sector is essential to maximize development. Governments of many countries use Public Private Partnerships to introduce technology and innovation while traditional resources are at risk. PPP is regarded as an opportunity to solve problems of inefficiencies and also to deal with limited resources through competition, economies of scale and project finance (Surachman et al., 2020).

Panayotou points out two potential benefits when the private sector participates in infrastructure development PPP projects: improved management and efficiency, increased access to private capital for maintenance and infrastructure expansion. In the context of the current restrictive monetary policy of most Governments, the private sector can help reduce pressure on public finance by providing the capital needed to build and expand infrastructure. Technical expertise and innovation in implementation have helped the private sector improve the performance of infrastructure (Panayotou, 1998).

Infrastructure development through PPP models has been very popular in the world, especially in industrialized countries such as the UK, France, Germany..., and in emerging industrialized countries with high infrastructure demands such as China, India... Since 1992, the UK Government launched the Private Finance Initiative (PFI) to encourage PPP model in providing public services, many similar models have been applied in many developed countries and then in developing countries. PPP has shown to be a promising model in providing infrastructure and public services so far, and this form of investment has received the attention of many scientists and managements in many countries.

After studying the success factors of BOT projects in China, Qiao et al. (2001) and colleagues identified 27 factors and divided them into 06 groups according to the stages of the construction investment process: evaluation, bidding, permitting stage, construction, operation phase and handover phase.

In the UK, five groups with 18 factors were identified by Li et al. (2005b): Effective procurement, PPP project implementation capability, government guarantees, favorable economic conditions and available financial markets.

Research by Li et al. (2005b) has been inherited and applied by many authors to conduct surveys on these 18 factors in the context of different countries such as Cheung et al. in Hong Kong and China (Cheung et al., 2012b), Chou et al. in Taiwan (Chou et al., 2012), Babatunde in Nigeria (Babatunde, 2012), Ismail in Malaysia (Ismail, 2013a).

On the basis of considering the views of experts in China, Chan and his colleagues used factor analysis techniques and identified 18 factors, divided into 5 groups: Stable macro environment, shared public and private accountability, transparent and efficient procurement process, stable social and political environment, proper government control (Chan et al., 2010). On the basis of an empirical survey conducted in Hong Kong and Australia, Cheung et al. have found 18 important factors contributing to the successful implementation of PPP construction investment projects in Hong Kong and Australia. The results were then compared with the results obtained by a previous researcher in a similar survey conducted in the UK. From there, find out some key success factors common to the implementation of construction investment projects in the form of PPP, regardless of geographical location such as: Commitment and responsibility of the public and private sectors, the strength of private corporations, and rational risk allocation and sharing (Cheung et al., 2012a).

Osei-Kyei and colleagues reviewed and analyzed success factors through studies from 1990 to 2013 and found the three most important success factors: Political support, distribution and appropriate risk sharing, strong private groups (Osei-Kyei et al., 2015).

When studying the relationship between success factors, Shi et al. added 04 factors: standardized procedures for PPP projects, experience in implementing PPP projects of the private sector, financial capacity of the private sector and reasonable service prices. In addition to 25 factors synthesized from previous studies, he turned them into 29 factors corresponding to 4 groups: characteristics and capabilities of the State, characteristics of the sector private sector, user characteristics, collaborative environment and process characteristics (Shi et al., 2016).

In order to have a better view of the factors affecting the success of PPP, Kwak et al. conducted a rather elaborate study, synthesizing empirical studies on the success factors of PPP throughout 20 years to have a comprehensive assessment of this issue and conclude that there are 4 main factors affecting the success of PPP projects, including: Government roles and responsibilities, franchise selection, risks of PPP and PPP finance. The authors also recommend that to ensure the success of road PPP projects, governments need to complete the legal framework in the direction of creating favorable conditions for investors, distributing risks in accordance with project conditions, selection of capable partners, minimum revenue guarantee, exchange rate guarantee and macro policy stabilization (Kwak et al., 2009).

Cuttaree et al studied PPP success factors in the post-crisis environment using World Bank data on PPP investments from 1993 to 2001 in Chile and Mexico. Collected data were processed by SPSS tool with 7-point Likert scale. The evidence from this study shows that success factors include good project planning, clear and highly enforceable contracts, competitive and transparent bidding, adequate and transparent legal framework, governance, accurate revenue and cost forecasts, appropriate risk sharing, feasibility studies conducted by reputable organizations, willingness to pay users, good management of macroeconomic situation. However, this study did not show which factors are the most important (Cuttaree et al., 2008).

Although the PPP form has received the attention of many Governments around the world, due to the large number of stakeholders and the complex contract structure of PPP projects, PPP project implementation process takes a lot of time and is often hindered by many factors. The types of barriers causing failure when implementing PPP projects include: social, political and legal risks; unsuitable economic and commercial conditions; ineffective bidding mechanism; lack of solid financial analysis techniques; issues related to the State sector; issues related to the private sector (Zhang, 2005). Akintoye et al., who studied PPP projects held in the UK, confirmed that the investment preparation costs are high, the negotiation process is complicated and lengthy, it is difficult to assess the benefits - costs and potential conflicts among the parties involved which can bankrupt PPP projects (Akintoye et al., 2003). In addition, high implementation costs, lengthy procurement process, lack of appropriate skills, unattractive financial markets, inadequate risk transfer, and high user fees are also barriers to the success of PPP projects in the UK (Li et al., 2005a).

Nguyen and Than pointed out 07 barriers to PPP road infrastructure development: The legal framework for the PPP form is incomplete, overlapping when selecting projects, and the bidding process has not yet ensured transparency and created a unfair competition between State-owned enterprises and private enterprises, the progress of site clearance and capital mobilization is still slow, investors do not anticipate all costs and price increases as well as risk allocation, people's little consensus on fee collection after the project completion, and the limited capacity of PPP management agencies (Nguyen and Than, 2013).

In Vietnam, with the perspective of approaching PPP as the cooperation between the State and the private sector in building infrastructure projects, providing public goods and services, PPP appeared in Vietnam quite early with simple forms of cooperation such as the policy of socializing the provision of some public services such as hospitals and schools... Particularly for PPP projects in the field of transport infrastructure, they are mainly implemented in the form of BOT (Build-Operate-Transfer), BT (Build-Transfer) and has a history of about 20 years such as Co May Bridge on National Highway 51 in the early 90s of the last century, successful projects that have brought benefits for both the State and the private sector and there are also unsuccessful projects (Ong Thin bridge, underground car park in Ho Chi Minh City, Lien Khuong airport, Prenn pass road...). In general, the attraction of investment capital to develop transport infrastructure in the form of PPP in recent years is still relatively limited, the proportion of capital from this form is still very low compared to the budget capital, a number of projects have been implemented for many years, but have not been effective as expected. The above shortcomings have caused a waste of time and opportunities to develop the country's infrastructure, slow down the process of economic restructuring, and solving problems of economic and social growth.

Although there have been some studies on this issue, they have been carried out in different countries with different political, economic and social conditions. Currently, there has not been a complete study on the factors affecting the success of the PPP transport project implemented and released in Vietnam. Therefore, the article aims to conduct a survey to assess the influence of factors on the success of the PPP transport projects in Vietnam in order to create a foundation for the Government to offer incentive policies to support the operation and development of the PPP market, ensuring the successful implementation of PPP transport projects in the future.

2. Methods

On the basis of a comprehensive review of previous related studies, especially studies in the field of transportation, the author has synthesized 16 factors affecting the success of PPP transport projects in Vietnam. The next step is to build a survey table, select the number of survey samples and send them to the previously collected addresses. The survey form is mainly sent via email designed in the form of a Google Form questionnaire. According to Joseph et al., (2018) in Exploratory Factor Analysis (EFA), the sample size is larger than 100 units. On the other hand, according to Comrey and Lee (1992) for EFA exploratory factor analysis, the minimum sample size is 5 times the total number of observed variables.

In this study, the author designed and sent 120 questionnaires to individuals working at organizations related to PPP projects in general and PPP in transport in particular. Respondents were asked to rate the influence of each factor on the success of the traffic PPP project on a 5-point Likert scale: (1) very low, (2) low, (3) moderate, (4) high, (5) very high.

The collected data was collected by the author using SPSS software to check the reliability of the data by Cronbach Alpha coefficient and ranking the success factors according to Mean Score Techniques.

Table 1 - List of influencing factors

| Number | Influencing factors |
|--------|--|
| 1 | Stable macroeconomic conditions |
| 2 | Adequate and transparent legal framework |
| 3 | Investor's capacity |
| 4 | Good governance |

| | |
|----|---|
| 5 | Harmonious benefit sharing among the parties involved |
| 6 | Reasonable risk allocation among the parties involved |
| 7 | Social consensus |
| 8 | The capacity of state agencies |
| 9 | State and private commitments and responsibilities |
| 10 | Transparency in bidding |
| 11 | Supervision from the State |
| 12 | State support policy |
| 13 | Technical and financial feasibility of the project |
| 14 | The ability to mobilize loans from the financial market |
| 15 | Reasonable service price |
| 16 | Effective contract management |

3. Results and Discussion

During the survey period from April 2020 to June 2020, the author obtained 92 valid survey samples, accounting for 76.67%. The number of survey samples collected ensures analysis of influencing factors with the number of samples 5 times higher than the number of influencing factors. Among the 92 survey samples collected, 38 were from the public sector and 54 were from the private sector.

Cronbach's Alpha coefficient is used to check whether the observed variables contribute to the measurement of a concept under study or to check the consistency of the observed variables of the scale and specific data to assess the reliability of the correlation between the observed variables of the scale. Cronbach's Alpha coefficient indicates whether the observed variables are related or not, but does not indicate which observed variables should be dropped and which ones should be kept. The total correlation coefficient will help to eliminate those observed variables that do not contribute much to the description of the concept to be measured.

Cronbach's Alpha value ranges from 0 to 1. The higher the Cronbach's Alpha value, the more reliable the scale, and a level higher than 0.7 is considered good when testing the reliability of the scale. In addition to the value of Cronbach's Alpha coefficient, to ensure the reliability of the scale, the correlation coefficient of total variables (Corrected Item-Total Correlation) must be 0.3 or higher (Pallant, 2005; Josep et al, 2018).

Table 2 - Statistics of data reliability

| Number | Influencing factors | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|--------|---|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| 1 | Stable macroeconomic conditions | 58.706 | 16.979 | 0.537 | 0.829 |
| 2 | Adequate and transparent legal framework | 58.206 | 16.891 | 0.594 | 0.826 |
| 3 | Investor's capacity | 58.587 | 17.058 | 0.449 | 0.834 |
| 4 | Good governance | 58.369 | 17.444 | 0.440 | 0.834 |
| 5 | Harmonious benefit sharing among the parties involved | 58.464 | 17.526 | 0.353 | 0.839 |
| 6 | Reasonable risk allocation among the parties involved | 58.641 | 17.771 | 0.324 | 0.840 |
| 7 | Social consensus | 58.793 | 17.550 | 0.372 | 0.838 |
| 8 | The capacity of state agencies | 58.750 | 17.618 | 0.396 | 0.836 |
| 9 | State and private commitments and responsibilities | 58.260 | 15.624 | 0.622 | 0.822 |
| 10 | Transparency in bidding | 58.282 | 16.930 | 0.495 | 0.831 |
| 11 | Supervision from the State | 58.728 | 16.859 | 0.586 | 0.827 |

| Number | Influencing factors | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|-------------------------|---|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| 12 | State support policy | 58.337 | 16.819 | 0.492 | 0.831 |
| 13 | Technical and financial feasibility of the project | 58.652 | 17.746 | 0.305 | 0.842 |
| 14 | The ability to mobilize loans from the financial market | 58.619 | 17.711 | 0.406 | 0.836 |
| 15 | Reasonable service price | 58.673 | 16.925 | 0.578 | 0.827 |
| 16 | Effective contract management | 58.771 | 17.519 | 0.388 | 0.837 |
| Cronbach's Alpha | | | | | 0.842 |

Table 2 shows that Cronbach's alpha coefficient is $0.842 > 0.7$ and the correlation coefficient of the total variable (Corrected Item-Total Correlation) is greater than 0.3 to prove that the survey results ensure consistency and scientific reliability in the assessment of the survey subjects' scores. Thereby the survey results ensure high reliability and consistency.

Next, Mean Score Techniques are used to rank the factors. The results are shown in Table 3.

Table 3 - Ranking of influencing factors

| Influencing factors | N | Mean | Std. Deviation | Rank |
|---|----|-------|----------------|------|
| Adequate and transparent legal framework | 92 | 4.250 | 0.459 | 1 |
| Public and private commitments and responsibilities | 92 | 4.195 | 0.666 | 2 |
| Transparency in bidding | 92 | 4.173 | 0.526 | 3 |
| State support policy | 92 | 4.119 | 0.551 | 4 |
| Good governance | 92 | 4.087 | 0.460 | 5 |
| Harmonious benefit sharing among the parties involved | 92 | 3.989 | 0.524 | 6 |
| Investor's capacity | 92 | 3.869 | 0.538 | 7 |
| The ability to mobilize loans from the financial market | 92 | 3.837 | 0.426 | 8 |
| Reasonable risk allocation among the parties involved | 92 | 3.815 | 0.490 | 9 |
| Technical and financial feasibility of the project | 92 | 3.804 | 0.518 | 10 |
| Reasonable service price | 92 | 3.782 | 0.464 | 11 |
| Stable macroeconomic conditions | 92 | 3.750 | 0.483 | 12 |
| Supervision from the State | 92 | 3.728 | 0.471 | 13 |
| The capacity of state agencies | 92 | 3.706 | 0.457 | 14 |
| Effective contract management | 92 | 3.684 | 0.490 | 15 |
| Social consensus | 92 | 3.663 | 0.497 | 16 |
| Valid N (listwise) | 92 | | | |

The combined results in Table 3 show that the surveyed subjects all rated the influence of the factors from the average level or higher, the lowest is 3.663 and the highest is 4.250. The factor rated with the highest influence is "Adequate and transparent legal framework", the factor rated with the lowest influence is "Social consensus". At the same time, the 5 factors that have the greatest influence on the success of the traffic PPP project in Vietnam are also identified in the following order:

1. Adequate and transparent legal framework
2. State and private commitments and responsibilities
3. Transparency in bidding
4. State support policy
5. Good governance

The full and transparent legal framework is ranked as the most important factor contributing to the success of the transport PPP project in Vietnam due to the system of legal documents on investment in the form of PPP in the past. Up to now, it has been at the level of circulars and guiding decrees, so the consideration of raising the investment guidance in the form of PPP from decree to law is to improve mechanisms and policies. It is absolutely necessary to create a higher legal framework which is more transparent, more stable, in line with international practices to attract and encourage domestic and foreign organizations and individuals to participate in investments in the form of PPP.

Zhang, Li and colleagues also agree with that view and argue that the success of the Public Private Partnership depends greatly on the presence or absence of an adequate and comprehensive legal framework (Zhang, 2005; Li et al., 2005b). Qiao and colleagues believe that a complete and transparent legal framework is a prerequisite for the success of PPPs to increase the confidence of private investors, ensure efficient projects, and distribute risks properly and avoid potential risks (Qiao et al., 2001).

Therefore, governments need to provide a full legal framework before starting projects, which shows the Government's commitment and seriousness in implementing projects in the form of PPP. It is also the foundation for the success of the project.

The commitment and responsibility of the State and the private sector is the second most important factor determining the success of the transport PPP project. The above results are consistent with the study of Chan et al. (2010) and Li et al. (2005b) affirmed commitment as one of the basic principles in public-private partnerships. Commitment from both parties is necessary to ensure the ultimate goal of PPP projects to be achieved. Therefore, to ensure a successful PPP project, all parties must commit their best resources to the project.

Transparency in bidding is the third most important factor determining the success of a transport PPP project. Recently, most projects have applied the form of contractor appointment. Although the law allows appointment and contractor appointment basically complies with the law, the appointment of contractors has limited competition. In the coming time, the selection of investors to implement PPP projects to develop transport infrastructure must be on the basis of competition, fairness, transparency and economic efficiency. Only competitive bidding can stimulate new creativity, ensure transparency, and allow more choices of investors when implementing projects in the form of PPP.

The State's support policy is the fourth most important factor determining the success of the PPP transport project. Government support is needed (especially for developing countries) to ensure that private participation is possible and people's needs are met. The ability to attract the private sector to successfully implement PPP projects is strongly dependent on the Government's supportive policy. PPP projects in the transport sector will not attract the private sector if the level of government support is not effective enough. Forms of government support include: (i) Direct support: capital investment (initial capital contribution), subsidies, support for operating costs, free land use, utilities and incentives tax incentives..., (ii) Indirect support: loan guarantee, minimum revenue, exchange rate,...

Good governance is the fifth most important factor determining the success of a traffic PPP project. Good governance is an essential element to ensure the success of PPP projects. It is important to have good governance, as stated by the United Nations Economic Commission for Europe, because inefficiencies in governance have led to the failure of PPP project implementation in many countries (United Nations Economic Commission for Europe, 2007).

Along with an adequate regulatory framework, good governance is also a necessary condition to ensure that private sector participation in public projects will bring maximum benefit to the community. Good governance requires strategic private investor selection, proper disclosure of relevant information to the public, and a regulatory body that oversees contractual arrangements throughout the term life of the franchise. That is, in the PPP contract the main responsibility for implementation belongs to the private sector, but the Government must be actively involved in the project phases to ensure that the project meets the expected quality and objectives. The government should maintain controls on the quality, schedule and capacity of the investor, retain control in the event of implication, and be willing to engage and re-supply the service if necessary (Jamali, 2004). Inappropriate Government involvement or Government inability to manage PPP projects can lead to project failure (Kwak et al., 2009). Therefore, good governance is an important factor for the success of a PPP/BOT project (Ismail, 2013b).

4. Conclusions

Applying the form of Public Private Partnership in the construction of transport infrastructure is necessary in the context of the limited state budget. Through the implementation of PPP projects, the experience, knowledge and financial resources of the private sector are effectively mobilized and exploited. This study has examined the factors affecting the success of PPP transport projects in Vietnam. Research results show that there are 5 factors considered very important with the mean value greater than 4 and 11 factors in the range of 3 to 4 (important). In particular, the factor "Adequate and transparent legal framework" is considered as the factor that has the greatest influence on the success of the traffic PPP project in Vietnam. Therefore, in the near future, the Government of Vietnam should soon complete the legal framework on unified and synchronous PPP projects in order to improve the efficiency of transport PPP projects. It is also necessary to have strict regulations on criteria for selecting projects for PPP investment, criteria for assessing investors' financial capacity. In addition, it is vital to consider the coordination of success factors to ensure the highest efficiency of the PPP projects transport.

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