

DETERMINING RISK FACTORS IN THE DEVELOPMENT OF ROAD TRAFFIC INFRASTRUCTURE IN PPP FORM IN VIETNAM

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ABSTRACT

Private sector participation plays a vital role in the success of the investment and development of road infrastructure in the form of public-private partnerships in Vietnam. The paper is aimed to study factors affecting private sector investment intention in the road infrastructure PPP projects. Using the linear regression model and the data from the surveys, the research indicated that the three variables affecting the investment intention, including lenders' support, service users' support, as well as the capacity and experience of the private sector.

Key words: Infrastructure, PPP, Risks, Transport, Vietnam

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1. INTRODUCTION

Transport infrastructure in general and road transport infrastructure in particular have a significant impact on socio-economic development. According to Hilling and Hoyle[14],

"transportation plays an important role in linking economic development with the advancing process of society". The higher level of socio-economic development, the higher demand for the quality and quantity of transportation. Vietnam Government maintains an investment level of approximately 2.0 to 2.5% of GDP/year on the transport sector (of which road investment accounts for over 70%)[13], but there has been no significant change in Vietnam road transport infrastructure. Moreover, the gap between supply and demand for capital investment in this field is increasing. According to the World Bank, from now to 2020, Vietnam needs to increase the investment level of 3.5 to 4.0% of GDP / year to meet the transport needs and economic growth. For road transportation in particular, the amount of investment capital during 2010 - 2020 period is estimated at around US \$ 77 billion[24] (over US \$ 5 billion / year). The investment demand for transport infrastructure development in Vietnam is very high, while the state budget is very limited. Therefore, the public-private partnership has become an inevitable trend. This form of investment helps to provide road transport infrastructure, while reducing pressure on public investment budget and optimizing investment efficiency.

Theoretical studies [7], [11], [17], ... as well as empirical research [13] have come to a consensus that one of the most important factors to successfully develop the road transport infrastructure in PPP form is to develop a comprehensive list of risk factors. These studies have many similarities in the risk portfolio. However, there are also many differences, such as, the risk of nationalization and expropriation, the lack of complete, clear and appropriate national laws on PPP, which only appear in studies carried out in the developing countries. These differences depend on the political institutions, laws and characteristics of the economy. For these above reasons, the paper presents a list of risk factors in road transport infrastructure in PPP form in Vietnam based on qualitative and quantitative research method using the questionnaire.

2. LITERATURE REVIEWS

There is not yet a unified concept of risk, some researchers describe risk as events with negative consequences, while other researchers describe it as the inclusion of negative and positive outcomes, and, at the same time, there is no clear combination of risk and uncertainty (Padiyar, 2004). Al-Bahar (1989) combined the nature of risks and uncertainties and described risks in infrastructure development PPP projects as "The exposure to the chance of occurrences of events adversely or favourably affecting project objectives as a consequence of uncertainty". Akintoye and Macleod (1997) conducted a survey of contractors on the project management practices in the British construction industry, which showed that the common perception of risks in PPP projects was "the likelihood of unforeseen factors occurring, which could adversely affect the successful completion of the project in terms of cost, time and quality". Sharing the same view, Michel Barnier (2003), OECD (2008), ESCAP (2011) identified "Risks are inherent in all PPP projects as in any other infrastructure projects. They arise due to uncertain future outcomes which may have direct effect on the provision of services by the project, and/or the commercial viability of the project."

A salient feature of PPP is its high level of risk, mainly due to the long concession period and the diversity of parties involved. Many researchers have carried out extensive researches on risks related to PPP projects and on risks allocation strategy. Although these studies may focus on different investment forms, different infrastructure sectors and / or different areas, they all play an important role in providing a comprehensive view of PPP related risks (Table 1).

Table 1 Summary of key studies on PPP risks

No.	Authors	Forms of PPP	Scope of study	Key findings
1	Charoenpornpattana and Minato (1999)	PPP	Thailand	Propose risk allocation strategies for five categories of risks: political, economic, legal, transactional and operational risks.
2	Grimsey and Lewis (2002)	PPP	Scotland	<ul style="list-style-type: none"> • Present a framework for investigating and performing risk analysis. • Systematic review of project risks from the perspective of the procurers, project sponsors and senior lenders.
3	Li et al. (2005)	PFI	United Kingdom	<ul style="list-style-type: none"> • Identify three risk levels: macro, meso and micro level of risk. • Priority discovery in risk allocation: macro and micro level risks should primarily be retained by the public sector or shared with the private sector; while most of the meso-level risks should be retained by the private sector. • There are some risks in which unilateral allocation is not always clear.
4	Nisar (2007)	PFI	United Kingdom	<ul style="list-style-type: none"> • Discuss two strategies of transferring risks, explicit and implicit risk transfer, about design, construction and development, performance, operating costs, variability of revenue, termination and other project risks.
5	Thomas et al. (2003)	BOT	India	<ul style="list-style-type: none"> • Identify eight types of risks: transport revenue risks, delay in land acquisition, demand risks, delay in financial closure, completion risks, cost overrun risk, debt servicing risks and direct political risks. • Discuss the risk perception of project stakeholders and the factors affecting risk acceptance.
6	Wang et al. (2000), Xenidis and Angelides (2005)	BOT	Various countries	Discuss risk factors in political, foreign exchange and revenue, financial and legal risk categories.

Source: Summary from the author

2.1. Identify and Classify Risks

Identifying risks is the first step in properly managing them (Berkeley, 1991). Therefore, the researchers identified potential risks associated with the PPP project and proposed a number of classification methods to structure these diverse risks. Merna and Smith (1996) have classified PPP project risks into two main categories: global risk and elementary risks. The risk factors in the first group are generally those that are outside the control of project participants, including political, legal, commercial and environmental factors. The latter group contains most of the project-level risks, such as construction, design, operation, finance and revenue. Li et al. (2005) proposed a three-level classification to classify PPP project risk. This approach classifies PPP risks into three levels: macro, meso and micro level. Macro-level risks are external risks to the project itself, meso-level risks are risks associated with the project, while micro-level risks are related to each project participant. A widely used approach is to classify risks according to the specific areas of the project to which they are related, finance for instance.

Number of theoretical and empirical researches were carried out to classify the risks in transport infrastructure development in PPP form.

(i) *Risk classification based on project development stages.* Padiyar (2004), Estache et al. (2007)[6] researched on risk management in partnership in transport infrastructure development and classified risks based the project phase: *risks in construction phase* and *risks in project operation phase*.

(ii) *Risk classification based on the perspective of the related parties.* According to Shen et al. (2006), risks in PPP projects include the main types: project-related risks, government-related risks, customer-related risks; and risk- minimized knowledge risk.

(iii) *Risk classification based on the sources of risks*

The most commonly used risk classification is the one suggested in Li. B (2005b) whereby risks are divided into two categories: (i) *Exogenous risks (general risks, macro-level risks or national risks)*, including: political and legislation risks; legal risks; socio-economic risks, and force majeure risks. (ii) *Endogenous risks (meso and micro-level risks)*, including project development risks, project completion risks, project operation risks, and coordination risks. This classification is also used in studies [21], [23].

Table 2 Risk classification in PPP form in transport infrastructure development

Classification base	Author (year)	Risk classification
Base on the project phase	Padiyar (2004) Estache et al. (2007)	Risk in the project development phase
		Risks in the project construction period
		Risks in the project operation period
Based on the perspective of related parties	Shen et al. (2006)	Project-related risk; Government-related risk; Customer-related risk; Risk-minimized knowledge risk
Based on risk source	Li B.A., et al. (2005b); OECD (2008); Wang, Tiong et al. (2000); ...	External risks (general risks, macro level risks, or national risks).
		Endogenous risks (specific risks, meso and micro level risks).

A comprehensive list of risk factors will provide PPP investors with a tool to control project risk, mitigate its potential consequences and ensure the success of public-private partnerships.

Studies on risk identification in the PPP form and particularly in PPP investment on road transport infrastructure were carried out in developed countries and regions: England [17], Australia [25], Europe [4], North America [7], in developing countries and regions: Asia [29], China [26] and on the common ground of countries [10], [16], [21], [23], [5], etc... with different purposes, aspects and scope, both theoretically and practically, in order to develop a list of risk factors.

Having studied these documents and researches, the author has developed a list of risk factors in PPP road infrastructure project based on the risk allocation by source of risks. The list includes 46 risk factors, classified into 8 categories: (i) Political and policy risks, (ii) Legal risks, (iii) Economic and financial risks, (iv) Objective risks, (v) Risks in project development, (vi) Risks in project completion, (vii) Risks in project operation, (viii) Coordination risks [Appendix 1].

3. RESEARCH METHODOLOGY

This paper uses qualitative and quantitative research methods according to the following research process:

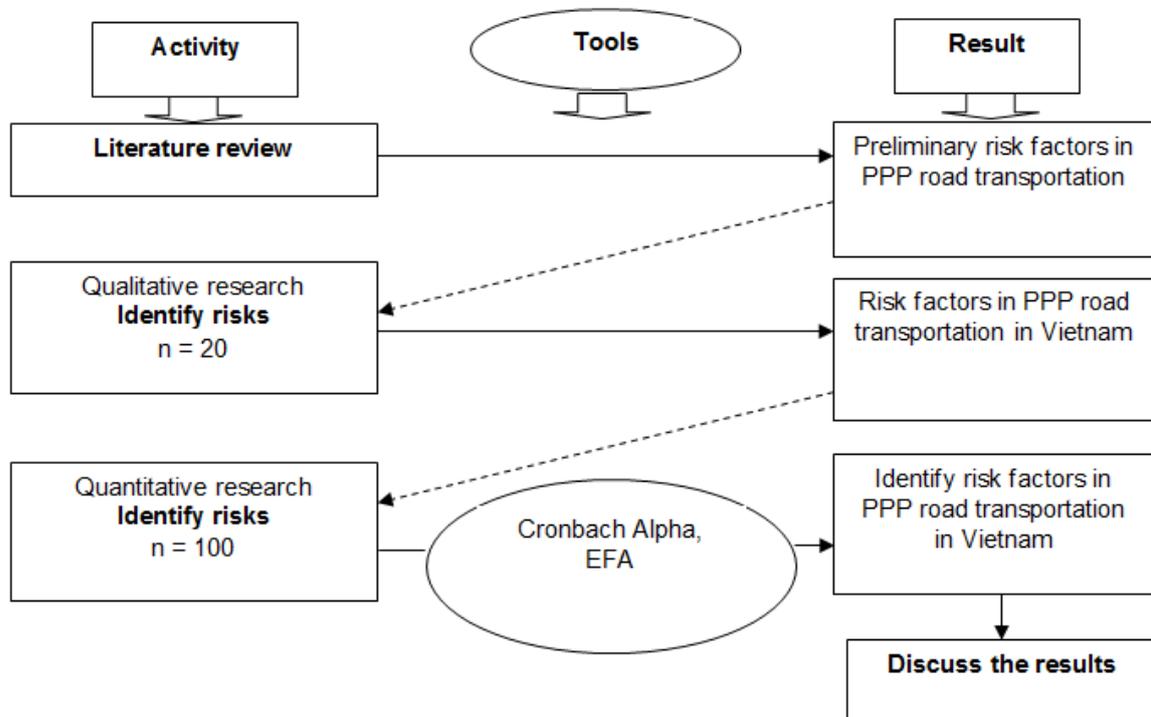


Figure 1 Research procedure

3.1. Qualitative Research Design

Qualitative research is conducted to explore independent variables, adjust and supplement observations to measure the subject matter.

This method is done by in-depth interview based on the predetermined content.

3.1.1. The objective of in-depth interviews

The objective of in-depth interviews in this research is to adjust and supplement the scale for the subject matter.

In Vietnam, there has not been any specific research on risk identification in PPP road transportation, so the scales from previous studies need to be adjusted to fit to Vietnam circumstance before conducting official quantitative research.

Results of qualitative research from in-depth interviews with experts in PPP in road transportation are included in order to establish an official scale for risk identification for PPP road transportation in Vietnam.

3.1.2. In-depth interview method

- Participant in in-depth interviews (Survey respondent)

In-depth interviews were conducted with 20 experts in PPP field in Vietnam, of which there are 10 experts in economic analysis (who has PPP-related research), 5 experts in policy making (related to PPP) and 5 practical staff in this area.

- Content of in-depth interview [Appendix 2]

- Collecting and processing information

Each interview lasted between 30 to 60 minutes on the predetermined content. The contents of the in-depth interview were fully recorded. The interview results of 20 experts were then summarized by each content. The author compared and synthesized to generate an overview on the subject matter.

3.2. Quantitative research - identifying risk factors in PPP roads transportation in Vietnam.

The official scale for determining risk in PPP road transportation in Vietnam is assessed through quantitative research with a sample size of 100 samples.

The sample includes: (i) state management agencies on PPP; (ii) private sector enterprises who are investing or are willing to invest in the construction of road transport infrastructure; (iii) credit institutions, banks; (iv) state-owned enterprises, competitors of the private sector in the construction of road transport infrastructure.

The list of risks in PPP road transportation in Vietnam is determined through the Cronbach's Alpha coefficient of reliability and the Exploratory Factor Analysis (EFA) method.

4. DETERMINATION OF RISK FACTORS

4.1. Summary of qualitative research results

Through qualitative research, the author compares, summarizes and supplements 08 risk factors:

- Project development risks: (i) Change of project scale; (ii) Topographic and geological survey errors;
- Project completion risks: (iii) inappropriate selection of contractors, consultants, supervisors;
- Project operation risks: (iv) Risks in fee management technology; (v) Project payback period; (vi) Project management and operation competence;
- Coordination risks: (vii) Consensus of authorities and local people; (viii) Change in organization and personnel of Project Company.

From the results of qualitative research, the survey questionnaire identifies 54 risk factors in PPP road transportation in Vietnam comprises, including: 46 risk factors from the previous studies and 08 risk factors supplemented from qualitative research results.

4.2. Quantitative research results

4.2.1 *The coefficient of confidence of Cronbach's Alpha factors*

(i) Political and policy risk scale

Table 3 Reliability Statistics

Cronbach's Alpha	N of Items
,782	6

Table 4 Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Nationalization and expropriation	SXRR.A.1	,621	,726
Government reliability risk	SXRR.A.2	,759	,689
Poor public decision-making process	SXRR.A.3	,351	,795
Political opposition	SXRR.A.4	,299	,806
Government intervention	SXRR.A.5	,670	,716
Corruption of government officials	SXRR.A.6	,557	,747

The total Cronbach's Alpha coefficient of the scale is $0.782 > 0.7$, which indicates that political risks and policies factors included in the scale are reliable

However, the risk of political conflict (RR.A.4) has Corrected Item-Total Correlation = $0.299 < 0.3$, which indicates that this factor does not correlate very well with the scale overall. Therefore, it is excluded from the list of risk factors in PPP road infrastructure in Vietnam.

(ii) Legal risk scale

Table 5 Reliability Statistics

Cronbach's Alpha	N of Items
,823	3

Table 6 Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Law and legislation changes risks	SXRR.B.7	,778	,663
Tax regulation change	SXRR.B.8	,670	,776
Sufficient, clear and appropriate national law on PPP	SXRR.B.9	,608	,824

The total Cronbach's Alpha coefficient of the scale is $0.823 > 0.7$, indicating that legal risks factors included in the scale are reliable

(iii) Economic and financial risks scale

Table 7. Reliability Statistics

Cronbach's Alpha	N of Items
,874	6

Table 8 Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Inflation risk	SXRR.C.10	,675	,856
Interest rate risk	SXRR.C.11	,571	,873
Foreign exchange and currency convertibility risk	SXRR.C.12	,872	,814
Reduced ability to provide capital	SXRR.C.13	,478	,882
Economic volatility	SXRR.C.14	,872	,814
Lack of appropriate financial instruments	SXRR.C.15	,706	,854

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The total Cronbach's Alpha coefficient of the scale is $0.874 > 0.7$, indicating that the risk factors in economic and financial risks included in the scale are reliable

(iv) Scale of project development risk

Table 9 Reliability Statistics

Cronbach's Alpha	N of Items
,816	10

Table 10. Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Project approval and permit risk	SXRR.E.17	,486	,800
Inappropriate project selection	SXRR.E.18	,376	,815
Financial attraction of project to investors	SXRR.E.19	,406	,808
Capability of the project company/ investor	SXRR.E.20	,381	,812
Inappropriate risk allocation for public-private partner in the contract	SXRR.E.21	,567	,791
Uncompetitive bidding	SXRR.E.22	,552	,794
Failure or delay in land acquisition	SXRR.E.23	,404	,809
Design and project budgeting risk	SXRR.E.24	,476	,801
Change in project scale	SXRR.E.25	,647	,781
Failure in topographic and geological survey	SXRR.E.26	,688	,775

The total Cronbach's Alpha coefficient of the scale is $0.816 > 0.7$, indicating that the risk factors in project development risks included in the scale are reliable.

(v) Scale of project completion risk

Table 11. Reliability Statistics

Cronbach's Alpha	N of Items
,886	9

Table 12. Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Quality risk	SXRR.F.27	,611	,876
Overrun construction cost	SXRR.F.28	,665	,875
Overrun construction time	SXRR.F.29	,574	,880
Inputs price	SXRR.F.30	,703	,868
Engineering and technical risk	SXRR.F.31	,720	,867
Change in private investors, supply contractors	SXRR.F.32	,625	,876
Delay in the supply of supplies, machineries and equipment	SXRR.F.33	,729	,866
Labor risk	SXRR.F.34	,635	,874
Inappropriate selection of contractor, consultant and supervisor	SXRR.F.35	,545	,883

The total Cronbach's Alpha coefficient of the scale is $0.886 > 0.7$, indicating that the factors in the project completion risk included in the scale are reliable

(vi) Operation risk scale

Table 13 Reliability Statistics

Cronbach's Alpha	N of Items
,907	10

Table 14. Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Demand risk	SXRR.G.36	,773	,891
Fee risk	SXRR.G.37	,799	,889
Payment risk	SXRR.G.38	,680	,898
Competition (Monopoly)	SXRR.G.39	,746	,893
Overrun operation cost	SXRR.G.40	,793	,890
Higher-than- expected maintenance cost	SXRR.G.41	,815	,888
High-than-expected maintenance frequency	SXRR.G.42	,818	,888
Fee management technology	SXRR.G.43	,157	,917
Project's payback period	SXRR.G.44	,131	,919
Project management and operation competence	SXRR.G.45	,694	,896

The total Cronbach's Alpha coefficient of the scale is $0.907 > 0.7$, indicating that the project operation risk factors included in the scale are reliable.

However, risk factor "Fee management technology" (RR.G.43), "the project's payback period" (RR.G.44) has Corrected Item-Total Correlation = 0.157 and 0.131 < 0.3 , indicating that this factor does not correlate very well with the scale overall. Therefore, these factors are eliminated from the scale.

(vii) Coordination risk scale

Table 15 Reliability Statistics

Cronbach's Alpha	N of Items
,903	9

Table 16. Item-Total Statistics

Risk	Code	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Excessive contract variation	SXRR.H.46	,632	,895
Weak contract management and dispute	SXRR.H.47	,656	,893
Lack of experiences in PPP	SXRR.H.48	,698	,890
Lack of commitment from public/private party	SXRR.H.49	,648	,893
Risk in organization and coordination	SXRR.H.50	,649	,893
Residual value risk	SXRR.H.51	,760	,885
Third part reliability	SXRR.H.52	,792	,882
Consensus of government and local people	SXRR.H.53	,570	,900
Change organization and personnel in project company	SXRR.H.54	,658	,893

The total Cronbach's Alpha coefficient of the scale is $0.903 > 0.7$, indicating that the factors in coordination risks included in the scale are reliable.

4.2.2. Exploratory factor analysis (EFA)

Table 17. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,677
Bartlett's Test of Sphericity	Approx. Chi-Square	5129,917
	Df	1275
	Sig.	,000

KMO coefficient = 0.677 satisfies the condition $0.5 < \text{KMO} < 1$; the significance level Sig. = 0.000 satisfies the condition Sig. < 0.005 . With 8-element rotation matrix, the total model explains 68,146% of the variation of the total factor.

The matrix rotation results give the convergence results of all risk factors in accordance with the author's classification and previous studies' result. At the same time, all risk factors when performing rotation matrix satisfy the condition that Factor loading greater than 0.3. Therefore, 51 risk factors in PPP infrastructure development projects in Vietnam are qualified and retained under Cronbach's Alpha test and exploratory factor analysis.

5. RESULT DISCUSSION

From the qualitative research results, 8 risk factors were added to the list of risks in PPP road transportation, bringing the total number of risk factors to 54.

Through the evaluation of reliability coefficient of Cronbach's Alpha factors, there are 3 risk factors, including (i) political opposition risk (RR.A.4), (ii) fee management technology (RR) .G.43), (iii) project's payback period (RR.G.44) with Corrected Item-Total Correlation < 0.3 being excluded from the list of risk in PPP road infrastructure in Vietnam.

Table 18 Result's Summary

Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
,943	54	,944	51

The results of the remaining 51 risk factors with Cronbach's Alpha Total Coefficient is $0.944 > 0.7$, indicating that those risk factors are satisfactory. These risks factors are classified into eight categories based on the source of risks, namely (a) Political and policy risks, (b) Legal risks, (c) Economic and financial risks, (d) Objective risks, (e) Project development risks, (f) Project completion risks, (g) Operations risks and (h) Coordination risks.

The research on the identification of risk factors shows that in order to promote PPP in the future, Vietnam needs to pay attention to the following issues and challenges:

- Firstly, the legal framework and policy mechanisms are incomplete. Although PPP is a form of investment that is expected to deal with the lack of capital to build road infrastructure, the policies are not specific and the guidance documents are insufficient.

In addition, the legal basis for PPP investment has not had the ultimate legal power. That is the reason why although this type of investment is highly expected, private investors have not responded positively.

- Secondly, there has not been a consistent perception of PPP. PPP has not been recognized consistently even in the legal documents. In other countries, PPP comes in various

forms, such as BOT, BTO, BT, etc. However, in Vietnam, the pilot regulations give specific guidance to PPP only, while Decree 108 and Decree 24 provides regulations for BOT, BTO and BT. Thus, PPP is regarded as a different investment form from BOT, BTO and BT. Only a few managers understand that in nature, a BOT project with private investor is a PPP project. Because of the inconsistency in the perception of PPP, the response to this fund raising form varies.

- Thirdly, administrative procedures is another challenge for private investors. The administrative procedure is very likely a major concern. An investor held an opinion that even when the proposal is approved smoothly by Ministry of Planning and Investment to obtain the Investment Certificate; it is only the first step in the long sequence of investment administrative procedures followed after. Indeed, according to an IFC's survey conducted in March 2009, in order to obtain an investment certificate, investors must perform three types of procedures, and then they need to complete another 11 procedures to be able implement the project. The number of visits investors take to the authorities is 38, the number of documents investor have to submit is 67, and it takes up to 450 days to complete.

Recently, although the procedure to obtain investment certificates for some pilot projects has been simplified, the remaining investment procedures are still complex and time-consuming.

- Fourthly, macroeconomic instability. The macroeconomic policies are constantly changing while the market economy institution has not well met the requirements of economic development and international integration. Therefore, escalated interest rates and exchange rate make it difficult for investors to control expected profits.

- Fifthly, finance and personnel. The question is, given Vietnam's current conditions, whether the private sector has sufficient technical and financial capacity to implement PPP. Right from the bidding phase, having a competent group of experts to compile a set of bidding documents that looks professional and attractive to investors is not an easy task.

The large capital requirement in PPP is also a big challenge for businesses, especially Vietnamese private enterprises. A Chairman of the Board of Directors, General Director of Transport Investment Joint Stock Company once suggested that the Ministry of Transport and the Government should work with investors, who have particular mechanisms to subdivide the bidding package to fit Vietnamese contractor's capability. As such, domestic contractors can participate properly as the main contractor, while ensuring the progress and quality.

In addition, the financial capacity of the project comes from the difficulty in raising capital. Domestic commercial loans is difficult. This is because domestic commercial banks and money market are still underdeveloped. They are unable to provide long-term capital to meet the needs of road transport infrastructure projects. The financial market in Vietnam is incomplete, the domestic bond market is underdeveloped, the international bond market faces difficulties when Vietnam's credit rating is not high. All of these factors, together with the global economic recession, hinder the private sector from capital mobilization for the projects.

- Sixthly, potential risks. Land acquisition and site clearance is a risk if the investor signs a PPP contract that does not guarantee immediate project implementation. In Vietnam, there are many uncleared lands; therefore, many projects are behind schedule, affecting the profit of investors. One of the prominent cases about prolonged construction time is the Binh Trieu 2 Bridge and Road BOT Project. This delay is caused due to many reasons, namely lack of capital, lack of space, changes in design. The project was commenced in February 2001 and expected to be completed in September 2003. However, until now, after more than 12 years, the project has just completed 2 out of 5 sub-projects.

Land compensation price set by the Government often does not reflect the actual market prices, together with the impact of inflation, it is very difficult to estimate and budget the project's cost.

The project implementation in Vietnam requires the involvement of a number of ministries, such as the Ministry of Finance, the Ministry of Planning and Investment, while international investors just want a single authority-in-charge.

The feasibility study is not attached to the planning and development forecast, so the forecast results are not reliable, which pose a high threat on the investment payback.

For a PPP project to be successful, the above risks as well as many other risks (such as risks related to exchange rates, future revenue) need to be calculated in advance by the related parties. These risks then must be negotiated and addressed specifically in the contract by the investor and the Government.

However, in Vietnam now, the risk allocation in PPP road transport infrastructure project is not appropriate, investors tend to push risks to the government to reduce responsibilities. At the same time, the government has no specific policy to share risks fairly with investors. This can be considered as one of the major challenges for the development of road transport infrastructure in the form of PPP in Vietnam today.

6. CONCLUSION

PPPs provide infrastructure development, and high-quality road transport infrastructure, while reducing the pressure on state budget and optimizing investment efficiency. One of the most important factors for achieving success in the form of PPP for developing road infrastructure is identifying a list of risk factors.

The study identified 54 risk factors (08 new risk factors were added), which are classified into 08 types of risks based on the sources of risks: (a) Political and policy risks, (b) Legal risks, (c) Economic and financial risks, (d) Objective risks, (e) Project development risks, (f) Project completion risks, (g) Operating risks, (h) Coordination risks.

The risks identification helps the Government and the private sector participated in PPP road transportation project to control risks in the best way. Therefore, investment efficiency will be higher than the traditional form of investment.

APPENDIX 1: SUMMARY OF RISK FACTORS IN PPP FROM STUDIES

Risk factor in PPP		Source
A. Political and policy risks		
1	Nationalization and expropriation	5, 6, 7, 9, 11, 12, 15, 17
2	Government reliability risk	6, 9, 10, 15, 17
3	Poor public decision-making process	4, 8, 9, 10, 15
4	Political opposition	8, 9, 10, 15, 17
5	Government intervention	5, 10, 15
6	Corruption of government officials	8, 15, 17
B. Legal risks		
7	Law and legislation changes risks	4, 5, 6, 9, 11, 12, 14, 15, 17
8	Tax regulation change	4, 5, 6, 9, 10, 11, 12, 14, 15, 17
9	Sufficient, clear and appropriate national law on PPP	14, 15
C. Economic and financial risk		
10	Inflation risk	4, 6, 9, 10, 11, 12, 13, 17
11	Interest rate risk	4, 5, 6, 9, 10, 11, 12, 13, 14, 17
12	Foreign exchange and currency convertibility	4, 5, 6, 9, 10, 11, 12, 14, 15, 17

	Risk factor in PPP	Source
	risk	
13	Reduced ability to provide capital	4, 5, 9, 13, 14
14	Economic volatility	5, 9, 10, 11, 12
15	Lack of appropriate financial instruments	9
D. Objective risks		
16	Force majeure	4, 5, 6, 9, 11, 12, 13, 15, 17
E. Project development risks		
17	Project approval and permit risk	4, 6, 9, 11, 12, 15, 17
18	Inappropriate project selection	4, 6, 8
19	Financial attraction of project to investors	6, 9, 12, 14
20	Capability of the project company/ investor	4, 6, 10, 12, 17
21	Inappropriate risk allocation for public-private partner in the contract	4, 5, 6, 8, 9, 14, 17
22	Uncompetitive bidding	4, 13, 17
23	Failure or delay in land acquisition	4, 6, 9, 11, 12, 13, 17
24	Design and cost budgeting risk	4, 5, 6, 8, 9, 11, 13, 17
F. Project completion risk		
25	Quality risk	4, 9, 17
26	Overrun construction cost	4, 5, 6, 9, 10, 11, 12, 13, 17
27	Overrun construction time	4, 5, 6, 9, 10, 11, 12, 13
28	Inputs price	6, 9, 12, 17
29	Engineering and technical risk	4, 5, 6, 9, 10, 11, 13, 17
30	Change in private investors, supply contractors	4, 9, 17
31	Change in private investors, supply contractors	4, 5, 6, 9, 10, 12, 17
32	Labor risk	9, 12, 13, 17
G. Operation risks		
33	Demand risk	4, 5, 6, 9, 10, 11, 12, 13, 14, 17
34	Fee risk	4, 5, 6, 9, 10, 11, 12, 13, 14, 17
35	Payment risk	4, 5, 6, 9, 11, 14, 17
36	Competition (Monopoly)	4, 9, 13, 17
37	Overrun operation cost	4, 5, 6, 9, 17
38	Higher-than- expected maintenance cost	5, 9, 13
39	High-than-expected maintenance frequency	5, 9, 11, 13
H. Coordination risks		
40	Excessive contract variation	9, 11, 13, 17
41	Weak contract management and dispute	4, 5, 11, 12, 13, 14
42	Lack of experiences in PPP	6, 9, 10, 12, 14, 15
43	Lack of commitment from public/private party	4, 8, 9, 11, 12, 20
44	Risk in organization and coordination	4, 9, 13, 14
45	Residual value risk	5, 6, 9, 11, 13
46	Third party reliability	4, 5, 9, 17

APPENDIX 2: CONTENT OF IN-DEPTH INTERVIEWS

- (i) Discuss PPP forms and PPP for road infrastructure development.
- (ii) Introduction of research: Within the scope of the study, the author uses the concept that risk is an event or factor that if occurs, it has a negative impact or opportunity on the project goals (in term of time, cost, quality and profit).
- (iii) Introduce and explain about "List of risks" in PPP road transportation that the author has compiled from previous studies.
- (iv) In your opinion, in addition to the above risks, what other risks are there in the PPP project to develop road transport infrastructure in Vietnam?

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