

Solutions to complete state management for road traffic infrastructure investment in BOT form

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ABSTRACT

This article recommends resolutions to improve the state management of road transport infrastructure investment in the form of BOT (Building - Operate - Transfer) in Vietnam, on the basis of Vietnam's practice and international experience. Accordingly, the group of authors solves 05 basic issues affecting the state management of PPP (Public - Private - Partnership) projects in Vietnam, including: State management's regulatory documents; State management model, content and management method; Personnels participating in PPP; Financial instruments and management; Investment environment. The authors used qualitative and quantitative research methods to identify factors affecting state management and eliminate duplicate factors and factors with small impacts. Through the multivariable regression equation, there is the general formula $Y = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n$ as the basis for the solution system. The conclusions drawn from the study help the state management to get a comprehensive view of the BOT projects that have been implemented in the past time to make adjustments and gradually improve the investment model in the form of PPP in general and BOT in particular.

Keywords : BOT (Building - Operate - Transfer); Road transport infrastructure; PPP model; PPP (Public - Private - Partnership); State management.

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I. INTRODUCTION

Climate change is the change of the current and future atmospheric, hydrological, biosphere, and lithosphere system due to natural and man-made causes. The main causes of the earth's climate change are increased activities that generate greenhouse gas emissions, overexploitation of sinks and reservoirs of greenhouse

gases such as biomass, forests, other terrestrial, coastal and marine ecosystems.

The term "PPP" stands for the English phrase of Public - Private - Partnership. There are many different interpretations of the public-private partnership. The most commonly understood is an agreement expressed through a contract between a competent state management agency and an investor/project enterprise

to implement the construction, operation, maintenance and/or management of infrastructure, etc. where ultimate responsibility for service provision of the state partner is reserved [1].

BOT stands for Building - Operate - Transfer. Accordingly, BOT is specifically defined as follows: a contract signed between a competent state agency and an investor/ project enterprise for the construction of infrastructure works. After completing the project, the investor/ project enterprise is entitled to do business for a certain period of time; at the end of the term, the investor/ project enterprise transfers the project to the state agency [2].

State management of PPP in road transport infrastructure investment is conducted by an organized system and by the laws of the State in order to mobilize and use the most effective resources of investors/enterprises participating in the transport PPP projects, with the aim of completing the road transport infrastructure investment, putting it into operation and use as quickly as possible to meet the increasing development requirements of the economy [3].

In Vietnam, there have been many authors conducting research on the state management of project investment in road transport infrastructure investment, some of which can be mentioned.

The Ministry of Transport (2009) in a study of PPP in construction of road transport infrastructure analyzed and evaluated the legal framework, regulations and policies for the road industry and proposed to support PPP in the road sector. Accordingly, the Ministry proposed the policy framework, legislation, model and capacity of the state management [4].

Ta Van Khoai (2009) in his research on state management of investment projects, analyzed the state management functions according to the management process, including: planning for investment projects; forming the legal framework for management of investment projects; promulgating and organizing the implementation of mechanisms and policies on management of investment projects; organization

model for management and personnels; and inspecting, controlling investment projects [5].

Dinh Kien (2010) when analyzing the causes leading to the failure of the investment projects to build the BOT infrastructure in the form of BOT, commented that: the project management capacity of the competent state management agencies was still weak; legal system, policies were not really complete and effective. Therefore, he proposed solutions on planning and policies, laws and regulations on PPP form [6].

Bui Thi Hoang Lan (2010) focuses on the application of the PPP model in Vietnam, including preliminary assessments of state management of PPP projects and some recommendations to improve PPP project management capacity and develop road traffic infrastructure [7].

Dang Thi Ha (2013) examined the shortcomings when applying the PPP method to mobilize capital from non-state areas for highway projects in Vietnam and stated that the policies were not specific; lacking of detailed written instructions. The legal document system has not covered all situations arising in reality, lacking of coordination among state management agencies [8].

Nguyen Thi Ngoc Huyen (2013) analyzed the state management of PPP in the construction of special traffic infrastructure, including: strategy development, planning, organizing the implementation of policies and regulations, implementing legal framework, management apparatus and personnels; investment monitoring and evaluation [9].

Nguyen Thi Hong Minh (2016) analyzed the current state management of PPP investment projects in Vietnam's special traffic system and offered a number of solutions including: completing the development plan of PPP projects; finalizing policies and laws for PPP projects; completing the state management apparatus for PPP projects; completing monitoring and evaluation of PPP projects [3].

In general, domestic studies have mentioned and addressed some aspects of state management of road PPP projects in Vietnam. However, these studies have

some limitations: (i) Only mentioning one or some specific aspects, there are almost no systematic studies on theory and assessment of the state management of the PPP project; (ii) The perception of scientists and policy makers on PPP is not consistent. S

Sometimes, they identified PPP as socialization of public services, or limited to the form of BOT, BTO, BT between the state and the private enterprises. They have not studied other forms of PPP such as the conditions for applying the form of M&O; (iii) There is a lack of research on strategies, plans, policies and laws of the state for PPPs in order to ensure effective control on the basis of transparency, legality and investment attractiveness.

International research related to PPP investment in general and PPP investment in infrastructure in particular is has been quite diverse. International studies often provide guidelines for PPP investment, while others provide information on the pros and cons of this investment approach, as well as the risks involved in the overall projects.

Hwang, T. and Chen, C. (2004), "Future Development of the Competitive Framework, Netherlands: International Kluwer Law", the authors identified the State represented by the policy makers must understand the expectations of private investors as well as barriers to PPP in order to be able to develop and complete the policy framework, support the private sector, and ensure the efficiency of state management in public sector. In PPP projects, the Government should be actively involved throughout the project life cycle to ensure the project meets its objectives [10].

Koch, C. and Buser, M. (2006) published in the International Journal of Project Management the research named "Emerging Meta Governance as an Institutional Framework for Public Private Partnerships in Denmark" and argued that targets in PPP contracts vary widely among different public authorities (Central and Local). Through PPP projects, the State will strengthen management capacity, innovate service quality, increase efficiency of

investment projects, optimize risk transfer/sharing capability, and ensure value for investment capital. [11].

Nyagwachi, J.N. and Smallwood, J.J. (2006), "PPP projects in South Africa: a systematic model for planning and implementation" at the Construction Industry Development Board Conference. The study found that a complete legal framework is necessary but not enough to guarantee the success of PPP projects. The authors pointed out that although a fairly complete legal framework has been built, PPP projects in the field of road traffic infrastructure in South Africa still failed due to: inadequate support policies; weak project management capacity of state agencies; and inadequate awareness of PPP both in the private and public sectors [12].

Yescombe (2007) "Principles of Public Private Partnership in Policy and Finance". The State is the decisive force in the development of PPP, responsible for creating an environment for PPP including policy framework, legal framework, unify legal provisions, bidding procedures, funding sources and financial instruments, arbitration, dispute settlement, monitoring and evaluation [13].

Cuttaree (2008) in his study "Success and Failure of PPP Projects" identified the success factors of PPP in Chile and Mexico in post-crisis conditions including: sufficient PPP project planning; appropriate legal framework; strong State management; effective macroeconomic management; ability to make payment of users; competitive and transparent bidding [14].

Generally, in the world, there have been many studies on PPP which have been implemented in many countries and considered as one of the capital mobilization channels for national infrastructure construction. The main scientific works are general policy analysis and legal framework recommendations. There have not been any studies on the limitations of legal PPP investment control in countries. Therefore, in the current context, Vietnam is expected to consider and learn the influencing factors and success

conditions for PPP projects, thereby gaining experience in PPP project implementation.

II. PRACTICES ON STATE MANAGEMENT FOR PPP INVESTMENT PROJECTS OF ROAD TRAFFIC INFRASTRUCTURE IN VIETNAM

In order to implement PPP projects of road traffic infrastructure with high efficiency, the role of state management is very important, to ensure the project objectives. In recent years, in order to assess the shortcomings of state management in PPP projects in general and BOT projects in particular, in Vietnam, the authors address the shortcomings and limitations through a number of methods and specific projects.

A. Hanoi - Hai Phong highway project

Hanoi - Hai Phong highway project with route length of 105,837 km, its starting point is at the roundabout and ring road 3 in Thach Ban ward (Long Bien, Hanoi), the ending point is at Dinh Vu port, Hai An district (Hai Phong).

The route has a road surface width of 32.5 m to 35 m with six lanes and a design speed of up to 120 km/h, two emergency lanes, a hard median strip in the middle, a green strip on both sides with some collection lines where necessary.

This project had some limitations, including the following points:

Large increase in total investment. The project was started in 2008, with a total initial investment of 24,500 billion VND, then adjusted to 45,000 billion VND (an increase of 45%). The reason was due to changes in basic design, inflation of raw material prices such as: cement price increased by 49%, diesel oil increased by 67%, asphalt price increased by 113%... compared to the approved price in January, 2008, resulting in a longer schedule and increased costs [15]. This shows that the role of state management was weak, especially in project approval and appraisal, risk management, contract management and responsibility of related parties, ...

Electronic toll collection (ETC) after 7 years of exploitation, not yet completed [16]. This shows that the State management has not fully anticipated the risks in the process of exploitation and operation to ensure transparency in the return of capital, which may lead to consequences such as tax evasion, loss of state budget, causing suspicion in public opinion.

B. Ho Chi Minh City - Trung Luong highway project

Ho Chi Minh City highway project - Trung Luong with route length of 61.9 km. Its starting point is at the intersection of Cho Dem - Binh Chanh - TP. Ho Chi Minh City, the ending point is the intersection of Than Cuu Nghia - Chau Thanh district - Tien Giang province. The route was invested to build an A-standard highway, grade 120 corresponding to Vtk=120Km/h, phase 1 was built with 4 lanes and 2 emergency slanes (4 x 3.75m + 2 x 3.0m) with a width of the roadbed from 25 to 26 m.

This project had some limitations, including the following points:

The environmental impact assessment has not been strictly controlled by the appraising agency. This led to the result that the rice plants along the highway developed abnormally, unevenly flowering due to the high-pressure lights illuminating continuously at night, causing failure of crops. The lighting system was repaired, which wasted investment funds [16]. It proved that the appraising agency has not fulfilled its responsibility in environmental impact assessment before approving the project and the state management did not make any responsibility handling.

The planning was not efficient, leading to a lack of regional linkages. The routes intersecting with the highway to Ben Luc district are incomplete when the project was put into operation. Then, it was supplemented. Currently, the project has to be postponed because the construction contractor violated the law [16]. We can see that the project appraisal was not well conducted.

The operation - management (O&M) was incomplete. This led to a loss of state capital (VND 725 billion of

tax amount, in addition to incorrect determination of vehicle traffic due to the absence of ETC) [16]. The state management has not done well in the project transfer contract and control the toll collection activities.

C. Trung Luong - My Thuan project

Trung Luong - My Thuan highway project (phase 1), route length of 51.5 km. The starting point is at Than Cuu Nghia intersection, the ending point is intersecting with National Highway 30 at An Thai Trung intersection.

The entire route has a road surface width of 17m with four lanes (4x3.5) and a median strip, no emergency lanes, a design speed of 80 km/h.

This project had some limitations, including the following points:

The construction lasted for a long time. The project was started in November 2009, and expected that, according to the contract, it will be put into operation and exploitation by 2012. After 13 years of construction, the project was only tested on January 25, 2022, and officially put into operation on April 30, 2022 (with a delay of 130 months) [16]. The reason for the delay is due to the slow response of the State management on site clearance; the coordination between central, local agencies and investors is not effective; plus the changes of state management from central to local levels also impact the project duration. The decentralization between state management and business management is not clear, the directing and controlling role of state management is not satisfactory. Maximum speed is 80 km/h, not suitable for highways [16]. This shows that the appraisal process is not good because the maximum allowed speed of highways in Vietnam is usually from 100 to 120 km/h. Therefore, calling this project "highway" is not appropriate in practice, this case can only be called "toll road". The appraisal agency has not complied with the mandatory standards on highway design and they did not have experience as well as traffic safety knowledge of the

design agency and the appraisal of the State management is not good.

There is no emergency lane, causing unsafety and congestions. With a design width of 17 m, including 4 lanes of 3.5 m wide and median, no emergency lanes. So, in the case of a vehicle having a breakdown or traffic accident, there is no exit, causing traffic congestion and great economic losses. Report of the Department of Transport of Tien Giang province in February 2022, in 10 days (from January 28, 2022 to February 6, 2022) there were 04 traffic accidents, killing 1 person, damaging 10 vehicles (05 cars, 02 trucks and 03 passenger cars) [17]. From April 30, 2022 to June 9, 2022, through the trial toll collection, there were 225 breakdowns of broken cars and traffic accidents, causing many hours of congestion, and the rescue work was also slow due to lack of traffic connection points for rescue vehicles to enter.

Investor capacity is not guaranteed. The project has changed investors twice. The first time (in 2015) - the investor is a consortium of Tuan Loc investors. The second time (in 2019) - Deo Ca Group [16]. This proves that the project preparation, bid review, investor selection of the State management... do not meet the requirements. This is entirely the responsibility of the State authority in selecting investors.

D. BOT project of Cai Lay

The Cai Lay BOT project belongs to the investment project to build the National Highway 1 bypass and strengthen the National Highway 1 road surface, the section passing Cai Lay town. The route length is 38 km, in which the length of the National Highway 1 bypass section passing through Cai Lay town is more than 12 km and the length of the old National Highway 1 route is more than 26 km. The project collects fees from August 1, 2018.

This project had some limitations, including the following points:

Unreasonable position. During the toll collection process, many vehicle owners caused trouble, causing congestion at the station for a long time, affecting

security and social order. As a result, the BOT project had to temporarily stop collecting fees [15]. The main reason is that the toll station is placed improperly and must be adjusted (Cai Lay toll station is located on National Highway 1 to collect tolls for all vehicles traveling on National Highway 1 route and bypass). This does not make sense because vehicles that do not take the bypass still have to pay the fees. Thus, the appraisal for selecting location is not good, lacking of transparency and the control role of the state management is weak during the project implementation. The state management has not carefully consider the social environment impact for the form of PPP investment project.

Toll collection policy has many problems: Cai Lay BOT station collects fees from VND35,000 to VND180,000/turn for cars of all kinds, not considering exemption or reduction for citizens living near the station, citizens not travelling the entire route. After that, it must be adjusted to exempt 100% of the fee for the above-mentioned people [16]. The state management has not fully anticipated the social impact; State management in some areas also has different ways of understanding, affecting the investment environment under the PPP method.

E. My Thuan - Can Tho Project

My Thuan - Can Tho highway project with route length of 23 km. The starting point is at Km107+363.08, located in Tan Hoa Ward, Vinh Long City, Vinh Long, the ending point is at Cha Va intersection (with National Highway 1, coinciding with the beginning point of Can Tho bridge project), in Thuan An commune, Binh Minh Town, Vinh Long. The project is constructed with 6 lanes, the width of the roadbed is 32.25m, the design speed is 100km/h. Phase 1 with 4 lanes, roadbed width of 17m, bridge width of 17.5m and the design speed is 80km/h.

This project had some limitations, including the following points:

Public investment is much lower than PPP investment. The total project investment in the PPP phase is VND

5,408 billion (approved by the Ministry of Transport in 2017). However, in April 2020, the project was adjusted to the form of public investment. At this time, the total investment decreased to VND 4,758 billion (a decrease of VND 650 billion) [16]. It proves that the control of the BOT project preparation stage has been abandoned and the appraisal is not good.

F. The Eastern North-South Highway Project in the 2021-2025 period

The Eastern North-South highway construction project (period 2021-2025), includes 12 component projects with a route length of 729 km, of which 08 projects are public investment (route length of 505 km) and 04 projects implemented by BOT form (224km in length). The project implements a phased investment according to the scale of 4 lanes with 17m of road surface (without 2 emergency lanes), the design speed is 120 Km/h.

The project failed to attract investors by BOT method, specifically: 04 projects that failed to attract investors had to switch to public investment [16]. This proves that the ability to attract PPP investment is not good. Although there is a Law on PPP investment (Law 64 takes effect on January 1, 2021 and Decree 35/2021/ND-CP dated March 29, 2021), the state management needs to re-evaluate and determine the cause (weak investor capacity, legal corridor problems). From the analysis results of the above PPP investment projects, it shows that the role of state management of PPP projects in general and BOT projects in particular is still limited and inadequate. It can be concluded that there are still many issues to be considered, such as:

First, the regulatory system of state management is not timely and not suitable with reality.

Second, the management model and method have not been able to separate the roles of state management and business management, causing overlap and confusion when implementing PPP projects.

Third, the project appraisal still has many problems, there is no specific responsibilities of relevant parties.

Fourth, in terms of the risk management of the State authorities and investors, all the risks throughout the PPP project are not fully anticipated, leading to many projects delaying progress and increasing costs.

Fifth, personnels involved in PPP projects are lacking of expertise and management skills.

Sixth, State management lacks effective financial tools to support investors.

Seventh, the transparency in investment and fee collection has not yet been ensured.

Eighth, legal factors have not been strong enough to attract investment.

Ninth, there are not investors with actual capabilities to implement PPP projects.

Through analyzing the shortcomings and limitations of the PPP investment projects mentioned above. It has been shown that the main factors affecting the role of state management, leading to inefficient PPP investment projects, causing losses, and increasing investment costs. In addition, there are a number of other factors affecting the role of state management such as: capacity of investors/enterprises; sense of responsibility; natural - economic - social conditions, etc. affecting the state management function for PPP projects.

In order to verify the factors affecting the state management of the above-mentioned investment projects of road traffic infrastructure in Vietnam, the article studies international experiences on state management of road traffic infrastructure investments, then notes down some lessons for similar cases in Vietnam.

III. INTERNATIONAL EXPERIENCE ON STATE MANAGEMENT OF THE ROAD TRAFFIC

INFRASTRUCTURE IN THE FORM OF PPP INVESTMENTS AND LESSONS LEARNED FOR VIETNAM

A. International experience on state management of the road traffic infrastructure in the form of PPP investments

1. The U.K. [3], [19]

To successfully implement the PPP project, the British Government has done well the following activities:

- Policy and law on PPP projects:

+ Ensuring the stability of PPP legislation. For example, PPP contracts are usually 25-60 years in term of duration. This will attract private investors and commercial banks can trust and offer long-term loans.

+ Ensure policy flexibility, as shown in the follow-up of "Private Funding Initiative" by the private funding system 2 (PF2). Accordingly, PF2 has provided 1 billion USD in investment capital for 46 schools and hospitals. Projects that demonstrate high value will receive a funding commitment in the form of credits for a private finance initiative.

- State management: The British Government's Ministry of Economy and Finance established the British Partnership which functions as a center for knowledge development and expansion of the Government's PPP projects, connecting with each Government agency in each PPP project. At the same time, it is responsible for consulting on the national PPP policy and strategy and specific PPP projects. For example, it supports bidding process to select investors; the partner organization operates thanks to the fees collected from the services they provide: preparation of sample documents and instructions for the project under the PPP method, etc.

- From the viewpoint of PPP implementation: Projects that cannot be completed by the private sector or that the private sector does not participate directly, then the government will perform those projects. The State encourages the form of contracting to the private sector all facilities of the project. Then the State rents

it back, so the facilities still belongs to private sector and they are leased by the State.

2. Korea [3], [8]

The Korean government has also taken a number of measures to ensure the success of the PPP projects, including:

Policies and laws for PPP projects: Korea especially encourages the private sector to invest in building traffic infrastructure. Investors can benefit from many tax reductions, including VAT exemption. The government guarantees the project revenue (which can be up to 90%) so the revenue risk is mostly transferred to the government side. Although the basic principle for fee collection is the “the beneficiary makes payment for infrastructure”. Simplified bidding procedures facilitate the selection of contractors by state agencies and participation in bidding by private investors.

Legal framework on PPP projects: fully promulgated by the Government to regulate the behavior of parties involved in the PPP projects, including the PPP Act in the field of infrastructure, the Decree and regulations detailed guidance on the implementation of PPP investment. The system of legal documents is highly flexible and timely adjusted to create a framework for the implementation of PPP projects. Especially, the PPP Act in the field of infrastructure from 1998 to 2010 was adjusted 48 times. In addition, the PPP legislation in the infrastructure sector of Korea is compatible with relevant laws such as: Road Toll Law, State Property Law, Local Finance Law, National Land Use and Planning Law, the Law on Urban Development, etc.

State management in PPP projects: Establish a separate “PPP management agency” to manage PPP projects. In particular, clear decentralization of management for PPP in the road sector, large projects decided by the Committee on private investment in the infrastructure sector at the central level, small projects are decided by localities.

3. Philippines [18], [19]

Mechanism: The government allows to implement a project proposed by a private investor, which will be tested through the market mechanism by inviting other interested investors to offer on the basis of competition among interested investors.

State management in PPP projects: The Government established the Investment Coordination Committee (ICC) which is the highest decision-making body for PPP projects. This is an interdisciplinary committee, the member of which are the Ministers and chaired by the President of the Philippines. Supporting the ICC is the National Economic Development Authority (NEDA) with the function of drafting and submitting policies on the form of PPP, including the investor selection process. NEDA is also the agency to coordinate among ministries and branches related to specific PPP projects, coordinate with the Ministry of Finance to ensure the State's participation in the project finance. In addition, the Philippine government also established a BOT Center under the Ministry of Industry and Trade, with the function of consulting for agencies implementing PPP projects.

4. Indonesia [3], [18]

Indonesia has mobilized private sector investment for infrastructure development since the 1990s. However, there are still reasons why PPP in Indonesia has not been as successful as expected due to:

- Lack of strong commitment and strong political support
- Lack of coordination between agencies.

B. Lessons learned for Vietnam

Through practice, after many years of applying the PPP investment method along with studying the experiences of countries around the world, some lessons can be drawn for Vietnam as follows:

Firstly, the promulgation of the law and legal framework is much slower than in the implementation of the projects in practice.

Second, the system of sub-law documents: from the research results in the above countries, it shows that to

ensure the success of PPP projects, the system of sub-law documents must be fully and timely promulgated. It is to ensure that the project is implemented smoothly, without interruption and affecting progress, quality, cost, etc.

Third, state management model and management method: it is necessary to separate the role of state management from the role of business management by establishing a focal point on PPP (for example, as in the United Kingdom, Korea...). Thereby, there are clear responsibilities of state management agencies, PPP agencies and project investors/ enterprises.

Fourth, personnel involved in PPP projects: it is necessary to consider training and improving professional competences for 02 basic personnel groups: state management and project investors/ enterprises.

Fifth, risk management: subjective and objective risk management needs to be identified and developed by the State Management into a specific management and response procedure. At the same time, a reasonable separation of risks among the State and project investors/enterprises based on the principle of "Equality – Minimizing risks".

Sixth, financial instruments and management. The State must develop an effective system of financial instruments to support investors, similar to the case of UK's "Private Funding Initiative".

Seventh, investment environment: The State needs to create favorable conditions to attract project investors/enterprises through policies such as VAT exemption and reduction, revenue guarantee (Example: in Korea, United Kingdom, etc.).

IV. RESEARCH METHODOLOGY

A. Research model and hypotheses

From the analysis results (Section 3) and (Section 4) above, it is shown that there are many factors affecting the effectiveness of state management for the PPP projects of road traffic infrastructure. In Vietnam, from the perspective of state management, it can be

summarized into groups of factors affecting the state management, including:

- Group 1: Legal system on State management (sub-law document system).
- Group 2: State management model and management method.
- Group 3: Human resources involved in PPP projects.
- Group 4: Financial instruments and management.
- Group 5: Risk management.
- Group 6: Investment environment of PPP projects.
- Group 7: The capacity of the State management and the project investors/enterprises.
- Group 8: Natural - economic - social conditions.

Through primary and secondary survey methods and combining with expert consultation, in order to remove duplicate factors and groups of factors with small influence, the original 08 groups of factors are shortened to 06 groups of factors that affect the state management of the PPP project in Vietnam, specifically:

Eliminating Group 7: C The capacity of the State management and the project investors/enterprises and Group 8: Natural - economic - social conditions because these groups of factors are controlled by Group 2: State management model and management method; Group 3: Human resources involved in PPP projects and Group 5: Risk management". When the State management performs well its role in perfecting the state management model and method, high efficiency can be ensured. At the same time, combining with the enhanced awareness and ethical qualification of human resources participating in PPP, and well-controlled risk activities, those group of factors will be eliminated.

Accordingly, 06 groups of factors proposed for research are divided into 02 groups, including: Group of internal factors and external factors, (Figure 1) shows the model of factors affecting the state management of PPP projects.

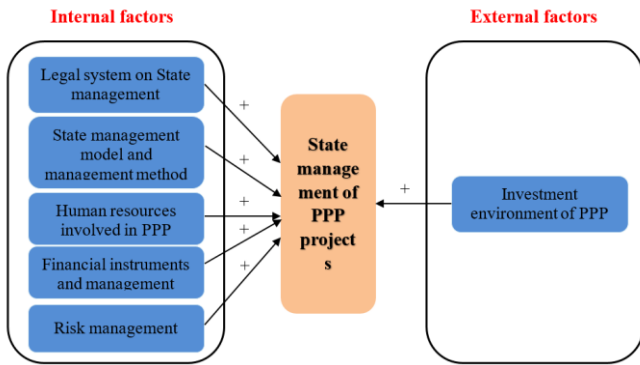


Figure 1. Model of factors affecting the effectiveness of state management of PPP projects

Source: Authors

“+”: Represents groups of factors according to the proposed hypothesis, which have a positive impact on the effectiveness of state management for PPP projects.

B. Questionnaire, scale

1. Questionnaire

The questionnaire was built on the following basis: Referring to previous studies on factors affecting state management locally and internationally.

Practical implementation of BOT transport infrastructure projects in Vietnam in recent times.

International experience in implementing road transport infrastructure of PPP projects.

Consultation from experts with experience in the field of traffic project management in general and BOT project management in particular.

The official questionnaire includes 42 observed variables (Table I), including: Legal system on State management (6 variables); State management model and management method (9 variables); Human resources involved in PPP (6 variables); Financial instruments and management (9 variables); Risk management (7 variables); Investment environment of PPP (5 variables).

TABLE I. GROUPS OF FACTORS AFFECTING STATE MANAGEMENT IN PPP

Factors	Code
1. Legal system on State management	
Completing the system of sub-law documents, in order to create a favorable environment for project investors/enterprises to implement PPP projects	HTVB1
The system of promulgated sub-law documents is incomplete (clearly defining roles, tasks, responsibilities, etc.) of state management agencies from central to local levels.	HTVB2
The system of sub-law documents does not have provisions on the "time period" that need to be adjusted.	HTVB3
Completing the regulations on responsibilities for the Sector Council when participating in the drafting of sub-law documents, ensuring practicality, international integration, scientific and technological development, etc.	HTVB4
The review work of experts and social criticism before the promulgation of legal documents is not well organized	HTVB5
Legal documents in PPP investment, including BOT, need to clarify the attractiveness, expressed in specific incentives.	HTVB6
2. State management model and management method	
State management model for investment projects in form of PPP, currently not suitable for practice in Vietnam	QLNN1
The state management model for PPP investment projects has not yet separated the	QLNN2

role of state management and the role of business management, causing overlapping and lack of transparency.	
State management model for investment projects in PPP form has a low degree of specialization because it still retains the part-time model of state management.	QLNN3
The state management for PPP investment projects is not clear in terms of structure, functions and tasks from central to local levels.	QLNN4
State management model for PPP investment projects is not ensured to be flexible, suitable for management subjects as project investors/enterprises.	QLNN5
Lack of a mechanism to check, evaluate and control project investors/enterprises' capacity in terms of technical, financial, management, etc. especially the financial capacity to be implemented throughout the project.	QLNN6
The responsibility of the PPP project appraisal agency has not met the requirements, causing the total investment to change many times, the quality of is not guaranteed, lacking of materials, etc.	QLNN7
The coordination between State agencies and bodies (Ministry of Planning and Investment, Ministry of Transport, People's Committees of provinces/cities...) is not good. There are still overlaps in tasks.	QLNN8
The supervision role of the community for PPP projects in has not been developed into a movement and built into a process, leading to a lack of critical information on state management.	QLNN9
3. Human resources involved in PPP	CNQL
The awareness of state management officials about the roles, tasks and responsibilities in the process of implementing PPP investment projects is not high.	CNQL1
Ethical quality of state management staff is not good, leading to lack of enthusiasm, not ensuring fairness in the project implementation.	CNQL2
Professional management capabilities of state management staff for PPP investment projects is still weak and inadequate	CNQL3
Training state management officials in implementing PPP projects has not been seriously carried out.	CNQL4
Policies for state management officials in PPP project investment are not satisfactory.	CNQL5
The capacity of managers of project investors/enterprises is not guaranteed in terms of quantity and quality	CNQL6
Financial instruments and management	QLTC
Medium-term capital sources for PPP investment projects need to be planned in order to have a plan to balance capital sources.	QLTC1
Create an open legal corridor for credit institutions to finance projects	QLTC2
Supporting investors in mobilizing and effectively using investment capital	QLTC3
State guarantee for PPP projects such as loan guarantee, revenue guarantee, etc.	QLTC4
Check and monitor the disbursement process for the project	QLTC5
Investment promotion activities need to be focused, to widely promote to domestic and foreign investors, to attract investment in PPP projects.	QLTC6
Lack of effective solutions for project investors/enterprises to access capital sources with low interest rate and long grace period	QLTC7
Monitoring the financial capacity of investors during the project implementation phase is of little concern	QLTC8
Controlling the toll collection by state management agencies is not effective.	QLTC9

Inefficient management caused great losses to the State budget	
Risk management	QLRR
The PPP project contract has not identified an accurate, complete and specific list of risks from a comprehensive point of view	QLRR1
Lack of transparency of contract terms, making it difficult to monitor and evaluate project investors/enterprises	QLRR2
The reasonable allocation of risks between the State and investors and service users has not been carefully calculated on the basis of consensus between the parties.	QLRR3
A reasonable risk management process has not been established for the stages during PPP project implementation	QLRR4
Lack of process to control contracts signed between competent state agencies and investors, leading to disputes, prolongation and delay in putting works into operation.	QLRR5
The development of the road transport system causes a decrease in the revenue of investment routes in the form of BOT	QLRR6
Lack of periodic assessment of the quality of works during exploitation, the sustainability of the project and the impact of the project on the socio-economic aspects.	QLRR7
Investment environment of PPP	MTĐT
The level of socio-economic development of the country requires state management to improve its management capacity to meet the requirements in Vietnam.	MTĐT1
State management lacks a mechanism to control the micro-management apparatus for project investors/enterprises during PPP project implementation.	MTĐT2
Lack of project investors/enterprises with actual finance capacity, leading to difficulties in selecting project investors/enterprises to implement PPP projects.	MTĐT3
The level of development and capacity of project investors/enterprises has not kept pace with the development of science-technology and international integration.	MTĐT4
Project investors/enterprises set profit target higher than socio-economic targets.	MTĐT5

Source: Authors

The scale

A Likert scale of 1 to 5 is used to measure these variables, where:

- (1) Not affected; (2) Very little influence; (3) Medium; (4) High influence; (5) Very high influence.

The order of processing survey results

In order to build a multivariate regression equation showing the influence of factors on state management of the PPP (BOT) road infrastructure projects in Vietnam, the authors conducted a survey to subjects who had experience in the field of BOT road infrastructure, project management, service users for BOT projects, etc.

Data were collected through the distribution of 250 questionnaires. After collecting, there are 250 valid

questionnaires. The encrypted data is processed using SPSS24 software. Procedure includes:

Step 1: Evaluate the reliability of the scale through Cronbach's Alpha coefficient.

In order to measure the internal consistency of variables in the same group, thereby eliminating the intrinsic inconsistency of variables in the same group.

Step 2: Exploratory factor analysis

In order to reduce a set of many interdependent measurement variables into a smaller set of variables, to be more meaningful but still contain most of the information content of the original set of variables.

Step 3: Analyze Pearson correlation

Check the close linear correlation between the dependent variables and the independent variables and

early identify the problem of multicollinearity when the independent variables are also strongly correlated with each other.

Step 4: Multivariate regression analysis

In order to assess the degree of influence of groups of variables on state management on investment projects of road traffic infrastructure in Vietnam, at the time of the survey.

Through the process of processing with SPSS24 software, following the above steps, the results of multivariable regression analysis (Table 2), show the groups of factors affecting the state management of the urban central system in Vietnam.

TABLE II. RESULTS OF MULTIVARIABLE REGRESSION ANALYSIS

Model		Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.094	.172		.543	.588		
	QLNN	.256	.035	.321	7.395	.000	.720	1.389
	HTVB	.278	.038	.325	7.408	.000	.691	1.447
	CNQL	.184	.034	.297	5.472	.000	.707	1.414
	QLTC	.146	.031	.201	4.771	.000	.678	1.475
	QLRR	.032	.031	.045	1.016	.310	.696	1.437
	MTĐT	.023	.037	.015	1.620	.000	.640	1.562

Multivariate regression results (Table II) show that:

- Eliminate QLRR factor group because it is not significant in the model. The test sig (t = 1.016) is greater than 0.05 and this group belongs to “Group 3: Human resources involved in PPP”. This shows that the research results are consistent with the practice of implementing PPP projects. Because people participating in PPP are fully aware of the form of PPP, the control of risks is subjective and objective will be efficient.
- The group factors of QLNN, HTVB, CNQL, QLTC, MTĐT all have an impact on the dependent variable. Sig t-test of each independent variable is less than 0.05.
- VIF coefficients of independent variables are all less than 10, no multicollinearity occurs.

So, the multivariable regression equation of the remaining 5 variables (according to the standardized Beta coefficient) is represented by formula (1) as follows:

$$QLNN=0.325*HTVB+0.321*QLNN+0.297*CNQL+0.201*QLTC +0.015*MTĐT \tag{1}$$

In which:

1. HTVB: Legal system on State management.
2. QLNN: State management model and management method
3. CNQL: Human resources involved in PPP
4. QLTC: Financial instruments and management
5. MTĐT: Investment environment of PPP

V. PROPOSING SOLUTIONS

From domestic and foreign studies on state management of PPP form; practical PPP investment methods in Vietnam and international experience; combined with re-testing through the above regression equation, the authors propose a system of solutions, in order to complete the state management of BOT investment projects of road traffic infrastructure in Vietnam.

A. Completing the legal documents on state management

The system of sub-law documents should ensure "Legality - Validity - Feasibility - Role and control function of state management" for PPP projects.

- Develop a separate set of legal documents for PPP projects (including adjustments to existing legal documents), on the basis of ensuring the following principles:

- + Clearly define roles, tasks, responsibilities, etc. of state management agencies from central to local levels.
- + Ensuring "Practical - International integration - The development of science and technology".
- + Regulations and responsibilities of the project appraisal council.
- + Provisions on the "Permissible adjustment period" for sub-law documents.
- + The role of experts and social critics before promulgating legal documents.

- Develop risk management process, risk responsibility and risk sharing mechanism, especially financial risk to ensure harmonization of interests between the State, society and investors. In particular, the risks of construction materials, site clearance, natural disasters, epidemics, etc. need to be developed into a specific handling process and specified in separate clauses in the contract, between the State management agencies and investors.

- Promulgating management sanctions and forms of handling violations to eliminate self-interested acts of group interests, causing bad consequences for the implementation of PPP projects.

B. Completing the state management model and management method

The current management model is not effective because the investment costs of BOT projects are too high compared to similar public investment projects. This is shown through the examples in Section 3.1, causing many reactions about fairness, project transparency and group benefits, etc. The authors propose a management model BOT investment

projects of road traffic infrastructure in Vietnam, on the basis of compliance with the following basic principles:

- Separation of state management role and business management role in PPP projects.
- Ensuring the "Effectiveness - Efficiency - Sustainability" of state management for PPP projects.
- The state management model is decentralized by industry and by locality. And, in order to unify all activities with the right objectives, there must be a specialized agency (specialized in PPP). Ensure perfection in the direction of increasing decentralization and specialization. On the basis of clearly defining roles, functions and responsibilities between state management agencies and professional management agencies.
- Ensure "Publicity - Fairness - Transparency" to attract investment from domestic and foreign private investors.

State management model in PPP:

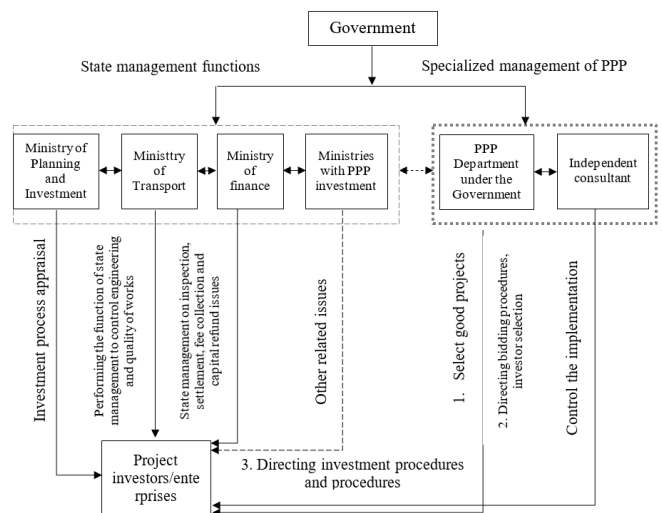


Figure 2. Model of management and control of investment in road infrastructure projects in the form of PPP in Vietnam [20]

Advantages of the model:

- Separation of state management and business management ensures fairness between the State and investors, minimizing group interests in investment.
- Mechanism for inspection and control of PPP projects ensures compliance with the law, clearly

defining responsibilities and obligations for monitoring and evaluation between competent state management agencies and project investors/enterprises, on the basis of reducing costs, reducing time and increasing quality, transparency and fairness for PPP projects.

- Mechanism to check, inspect and control the capacity of project investors/enterprises to implement PPP projects, especially the financial capacity is guaranteed. To ensure that investors mobilize enough capital to implement the project in accordance with the set goals and plans.

- Enhancing the community's supervisory role for the PPP project, in order to make the PPP project implementation process transparent, on the basis of ensuring the rights and responsibilities of investors and society.

- Coordination mechanism for implementation between agencies and levels (Ministry of Planning and Investment, Ministry of Transport, other ministries related to PPP investment, People's Committees of provinces/cities...), based on the assignment of responsibilities and how to coordinate in the entire process of project preparation and implementation.

Efficiency and science of the model:

With the model (Figure 2), for road traffic infrastructure PPP projects, the State needs to have a specialized agency to ensure the depth of business management and the ability to attract investment, establishing "The PPP Board" directly under the Government and has the same functions and powers as ministries and branches.

- The PPP Board has the functions of performing good project selection (investment urgency, socio-economic efficiency); Directing the process of project formulation and appraisal, organizing bidding to select qualified and experienced investors on the basis of transparency, fairness, increased competitiveness, and increased investment attraction; Directing throughout investment procedures. At the same time, the PPP Board signs contracts with independent consulting units,

controlling the entire project implementation process of the investor, in order to increase transparency.

- The Ministry of Planning and Investment is responsible for appraising the investment process.

- The Ministry of Transport performs the function of state management to control technical processes to ensure the quality of the works and the progress of the project.

- The Ministry of Finance shall perform the state management of payment, settlement, financial issues related to investment, collection of payback fees and other costs related to the project.

- Other ministries and sectors related to PPP investment in road transport infrastructure will coordinate with the PPP Board to resolve related issues. Thus, with the model (Figure 2), it is clear that the important role of the "PPP Board" is directly under the Government (instead of the Ministry of Planning and Investment as before). At that time, the PPP Board only specializes in managing PPP projects. Particularly, the state management function will belong to the ministries and branches with PPP investment, in order to increase the publicity, transparency and fairness of the project. Therefore, creating a basis for attracting investment, achieving project efficiency, and contributing to the development of the project, socio-economic development of the country, avoiding conflicts compared to the projects implemented in the previous period.

For projects under localities, the guiding role belongs to the Provincial People's Committee, while other actors (Departments, branches) are similar to Figure 2.

C. Improve professional qualifications and awareness of human resources participating in PPP

With the model (Figure 2), individuals and departments are involved with responsibilities in state management process for PPP projects. So, to perform the model well, it is necessary to have competent PPP human resources to complete the tasks. Therefore, it is necessary to train people to participate in PPP from

both perspectives: the management staff of the State Administration and of the project investors/enterprises.

1. Management staff (economic management, technical management) of the State Management

- Members of the state management apparatus participating in PPP investment must have a deep understanding of PPP, know how to apply and decide in accordance with each content and characteristics of each type of PPP investment.

- Officials of the State management agency must have the capacity, responsibility and experience to control the investment, negotiation and signing of PPP contracts.

- PPP managers need to be trained and updated regularly, in order to improve their professional capacity on PPP. On the following aspects:

+ Capacity to synthesize and consult.

+ Competence in appraisal and financial management.

+ Capacity to monitor and manage PPP contracts.

- Organize recruitment for civil servants and public employees based on the principle of "Competition - Publicity - Transparency", in order to select officials with ethical qualities, qualifications about investment and PPP projects.

- Expanding international cooperation to improve project management capacity by PPP method.

- For large-scale projects, consider hiring consultants with expertise in PPP or experts to assist the state in analyzing and evaluating PPP projects in order to limit risks.

2. Management staff of project investors/enterprises

The management team of the project investors/enterprises needs to ensure that their quantity and quality match the project requirements.

Organize short-term and long-term training courses on PPP project implementation experience (The State needs to stipulate that PPP certificates are required for organizations and individuals of project investors/enterprises when participating in PPP investment projects).

Building a unified system of PPP project management apparatus of investors, on the basis of clearly defining the roles and responsibilities of the departments and individuals controlling the project (design unit, investor supervision, construction, equipment supply, etc.)

D. Building financial instruments and controlling PPP project finance

Due to the lack of public investment capital, countries, including some developed countries, use the public-private partnership (PPP) method. However, some countries succeeded, and some countries failed due to the lack of a legal framework, processes, standards or lack of financial support tools [21]. When investors have to mobilize short-term capital up to 80% through banks, but the State has no tools to support the implementation. Therefore, the authors propose solutions to build financial tools and control finance as per the following contents:

1. For the state:

- Perfect the financial and budgetary mechanism for PPP projects. It is possible to study and arrange centralized budget sources at the central level exclusively for PPP projects and allocate to localities in each period, in accordance with the public investment plan and the medium and long-term financial plan, to serve the project preparation (site clearance, change of production structure, etc.)

- Proposing the investor's loan interest rate for the prioritized project (lower than the average rate of commercial banks), proposing state capital to participate in the project by many sources (Concentrated budget, or fund to cover the financial shortfall), it is possible to establish a PPP Bank as a dedicated bank.

- Develop a mechanism to mobilize capital from investors. There can be many options to mobilize capital such as ODA capital, preferential capital sources of the State.

- Develop regulations on payment methods and conditions for project investors/enterprises with the State's capital.
- Research on O&M investment form, in order to reduce interest expense, increase investor's ability to quickly recover capital and minimize force majeure risks.
- Research and supplement regulations on ETC method and appropriate service prices.
- Building risk sharing tools for projects such as guaranteeing revenue, foreign currency conversion, planning changes, etc.
- Enhancing the role of the State Audit in controlling capital sources, taking measures to support or make adjustment.

2. For project investors/enterprises

Establishing organizations to raise idle capital of small businesses and investors in various fields on a transparent basis to raise capital.

E. Improving the investment environment for PPP projects

Investment environment here is understood as objective and subjective environment. The environmental factors are calculated and forecasted in advance, it will reduce risks for the project. Managers have preventive or countermeasures to ensure the safety of the project, speeding up progress, reducing costs, etc. to quickly put the project into operation, contributing to economic development.

1. Objective environment

- Risks caused by political and economic instability in the world and in the country (war, riots, crises, etc.)
- The fluctuations of nature (weather, unusual rain and flood, earthquake, climate change,...) have an impact on the project.
- Response plans must be developed to increase prevention and proactively handle plans.

2. Subjective environment

- The State needs to create a healthy, equal and non-discriminatory competitive environment for all economic sectors.
- Complete support mechanisms and policies to attract investors to participate in PPP projects such as exemption and reduction of value-added taxes, corporate income tax, etc.
- Building the Government's website on PPP investment, creating a public investment environment and transparent information about PPP.
- Develop a management process for PPP projects, ensuring to encourage innovation and responsibility of PPP project implementation parties.
- Promulgate regulations on organizational structure of project investors/enterprises to implement PPP projects. On the basis of ensuring the number of personnel, the organizational structure, in accordance with the scale and technical requirements of the project.
- Develop processes for public evaluation and selection of qualified project investors/enterprises for project implementation.
- Simplify administrative procedures for PPP projects, in order to shorten the project implementation time, thereby reducing risks for project investors/enterprises, and increasing project efficiency.

VI. DISCUSSION

Within the collected research samples, the authors, through qualitative and quantitative analysis, have identified five groups of factors that have major impacts on state management in the form of BOT and are ranked according to the degree of gradually reduced impact including:

1. Legal system on State management ($\beta_1=0.325$);
2. State management model and management method ($\beta_2=0.321$);
3. Human resources involved in PPP projects ($\beta_3=0.297$);
4. Financial instruments and management. ($\beta_4=0.201$);

5. Risk management ($\beta_5=0.015$).

With the results of this study, it is shown that in order to ensure efficiency for the state management of road traffic infrastructure PPP/BOT projects in Vietnam, is necessary to identify to have regulations by the system of legal documents in order to manage and control these five groups of factors in the strictest way. In which, the group of factors of the legal system on State management and State management model and management method in the form of PPP should be carefully considered. Since in recent years, BOT projects implemented in Vietnam have many potential risks in terms of progress, cost, quality, etc., mainly arising from legal system that have not been issued in a timely manner. According to reality, the state management model has not separated the state management role and the business management role in PPP projects, leading to difficulties and confusion during project implementation. In addition, it is necessary to improve the level of expertise and awareness of human resources participating in PPP. Because in many projects, human resources are not qualified enough, causing economic losses to the State budget. Recently some PPP projects must be converted to public investment because they cannot attract investors, typically the East North-South highway project in the 2021-2025 period. This shows that state management needs to improve the investment environment for PPP projects, by building effective financial tools to support investors during project implementation.

The research results have overcome the shortcomings and limitations of previous studies locally and internationally on state management of road traffic infrastructure projects, specifically:

- Analyze and evaluate in detail the shortcomings and limitations in the state management of road transport investment projects in Vietnam, through the practice of a number of BOT projects that have been implemented in the past time.

- Identify and evaluate the level of factors affecting the state management of investment projects of road traffic infrastructure in Vietnam.

- Proposing a state management model to separate the functions of state management and business management.

The study achieved the following results:

- Theoretically: this study complements and continues the background studies in the world and in Vietnam on the principle of ensuring the success of the PPP projects.

- In terms of practice: the study points out the groups of factors that greatly affect the state management of PPP/BOT investment projects, thereby helping project participants (competent state agencies, investors, ...) get a comprehensive perspective through the implementation of BOT projects in Vietnam. Then, they can gradually improve the investment model in the form of PPP in general, form of BOT investment in particular.

VII. CONCLUSIONS

In Vietnam, the practice of implementing PPP projects shows that this is an ongoing process of both implementation and adjustment. A problem with many variables, many impacts, for which the successful condition requires a high socio-political consensus, to really put public services to serve the interests of the citizens. In economic terms, it must follow the principles of the competitive market and share benefits between the state and project investors/enterprises.

Research results are on scientific and practical basis, providing more feasible and effective tools for the state management of PPP/BOT projects. More specifically, managers/management agencies need to focus on implementing the following contents:

Firstly, perfecting the system of specific sub-law documents for PPP projects. International experience shows that, for successful PPP investment in other countries, in addition to the very stable legal system

promulgated by the Government and the system of sub-law documents issued by the central state management agency, state management in promulgated by localities, it is necessary to ensure the timeliness, consistency, closeness to reality, long-term life of the projects. This guarantees the effective implementation of the management role of the State management in unifying the subjects and properly implementing the set objectives.

Secondly, the role of state management is very important for successful PPP projects. In particular, the factor "State management model and management method" is a crucial factor to ensure effective management of PPP projects. It can be seen that the form of PPP is a special form of investment, so it is very important to build a separate model for PPP, in order to separate the roles of state management and business management. And, at the same time, it can ensure specific responsibilities among departments, sectors and the PPP Board (Figure 2). Thereby, increasing the publicity, transparency and fairness in the PPP investment.

Third, for effective project implementation, the role of human resources participating in PPP is always the core factor. This indicates that, in order to attach the responsibilities of individuals and departments to the process of state management of PPP projects, it is necessary to train people to participate in PPP from both angles: the management team of the State management and business management team of the investors.

Fourth, for effective project management, the financial factor is always carefully considered and evaluated. In particular, for the form of PPP with capital contribution from the State and project investors/enterprises, it is necessary to develop financial instruments and control finance from both the State's and project investors/enterprises' perspectives. In which, the State must develop financial instruments and control the state capital invested in PPP (from the state budget, ODA loans, etc.); project investors/enterprises ensure PPP

investment capital (from equity and bank loans or other mobilized capital).

Fifth, a PPP project with large investment and a long investment period will expose to subjective and objective risks. In order to attract investors, the State must ensure an attractive investment environment on the following principles: adequate legal environment; appropriate incentive mechanism; reasonable risk sharing between the State and investors, etc. on the basis of ensuring a healthy, fair, open, transparent and non-discriminatory competitive environment for all economic sectors.

VIII. REFERENCES

- [1]. Asian Development Bank (2012). Public-Private Partnership (PPP) Work Plan 2012-2020: Realizing the Vision Strategy 2020 - the transforming role of public-private partnerships in the operations of the Asian Development Bank, Ha Noi.
- [2]. National Assembly (2020). Law on investment under the mode of public-private partnership No. 64/2020/QH14, promulgated on June 18, 2020
- [3]. Nguyen Thi Hong Minh (2016). State management of investment projects in the form of public-private partnership in the construction of road transport infrastructure in Vietnam, PhD Thesis in Economic Management, National Economics University, Hanoi.
- [4]. Ministry of Transport (2009). Research on Public Private Partnership in Road Sector, Hanoi
- [5]. Ta Van Khoai (2009). State management of investment projects built from the state budget in Vietnam, Doctoral thesis, Ho Chi Minh National Academy of Politics.
- [6]. Dinh Kien (2010), Research on solutions to attract investment capital to build traffic works in the form of BOT, Ministry-level scientific project B2008.03.35.
- [7]. Bui Thi Hoang Lan (2010), Applying the PPP model in the development of road traffic

- infrastructure in Vietnam, Ministerial-level scientific project, B2009.06.126.
- [8]. Dang Thi Ha (2013), Mobilizing non-state budget investment capital to implement highway construction projects in Vietnam, Doctoral thesis, National Economics University.
- [9]. Nguyen Thi Ngoc Huyen (2013), Investment in the form of PPP in building traffic infrastructure in Vietnam, National Economics University Publishing House, Hanoi.
- [10]. Hwang, T. And Chen, C. (2004), The future development of competition framework, Netherland: Kluwer law international.
- [11]. Koch, C. and Buser, M. (2006), 'Emerging Metagovernance as an Institutional Framework for PPP Networks in Denmark', International Journal of Project Management, 14 (2006): 548-556.
- [12]. Nyagwachi, J.N. and Smallwood, J.J. (2006), 'South Africa PPP projects: a systematic model for planning and implementation', The 5th Post graduate construction industry development Board conference, Bloemfontein on 16-18 March 2008.
- [13]. Yescombe, E.R. (2007), PPP: Principles of Policy and Finance, Elsevier Ltd.
- [14]. Cuttaree, V. (2008), Successes and Failures of PPP projects, The World Bank Europe & Central Asia Region.
- [15]. Le Huong Linh (2018). Risks in state management for investment in the form of public-private partnership (PPP) in road transport: policy identification and solutions, Central Institute for Economic Management, Hanoi.
- [16]. The author's investigation, combined with some reported information about the implementation of PPP projects in Vietnam in the past time.
- [17]. Tien Giang Provincial People's Committee (2022). Report on projects implemented by the Ministry of Transport in Tien Giang province.
- [18]. Pham Quoc Truong (2022). State management of construction investment projects under the mode of public-private partnership in Vietnam, LATS Construction Management, Hanoi University of Construction.
- [19]. Le Manh Tuong, Le Hoai Linh, Dang Hoang Tuan, Le Phi Vu, "The transport infrastructure investment in form of public-private partnership in Vietnam - Current situations and recommendations", International Journal of Engineering Research & Technology (IJERT), IJERTV11IS050184 Volume 11 Issue 5, May – 2022.
- [20]. Le Manh Tuong, Le Hoai Linh, Dang Hoang Tuan, Le Phi Vu, "Assessment on Vietnam's Transport Infrastructure Development Investment under the mode of Public-Private Partnership - Proposing Solutions", International Journal of Scientific Research in Civil Engineering (IJSRCE), ISSN: 2456- 6667, Volume 5 Issue 5, pp. 156-163, September- October 2021.
- [21]. Dang Hoang Tuan, Le Manh Tuong, Dinh Dang Quang, Le Hoai Linh, Le Phi Vu, "Enhance the Quality of the Management System for BOT road Transport Investment Project in Viet Nam", International Journal of Scientific Research in Civil Engineering (IJSRCE), ISSN : 2456-6667, Volume 5 Issue 5, pp. 144-155, September-October 2021.

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