

The Transport Infrastructure Investment in form of Public-Private Partnership in Vietnam - Current Situations and Recommendations

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Abstract - From the economics - technical perspective, transport infrastructure is always a prerequisite for the development of each country. While the current public investment still faces certain limitations, the public-private partnership (PPP) – a form of raising idle fund from private sector, will be an effective mechanism for underdeveloped countries. Some countries have successfully applied this form, while some have failed. This indicates that the movement of market economic forms in each country will be different depending on the regional economic characteristics as well as the consistency between macro and micro policies of those countries. This paper discusses the practice of applying the PPP contract in Vietnam, including its benefits and drawbacks. Application of PPP investment form in Vietnam has provided a good and convenient transport infrastructure system, contributing to the economic development of the country. However, there have been some drawbacks that not only make the investments becoming less attractive, but also cause capital loss, and create negative effects that disrupt the existing market economic form. Therefore, it is necessary to make careful study and appropriate adjustment to actually promote the effectiveness of PPP investment by improving the quality of projects.

Keywords- PPP contract, Transport infrastructure, Forms of market economy, Imperfect competition, Transportation construction market.

I. INTRODUCTION

A PPP contract (Public-Private Partnership) is not a new concept. However, there has not been a complete, precise and clear definition of the nature of a PPP contract [1]. In practical term, the model and content of this form are developed in different scopes and methods by different countries. Depending on various factors such as the value of land use, regional factors, type of infrastructure, customs, culture, legal system, religion, etc. and the development level of each country, there will be a different approach in addition to the degree of failure and success when implementing PPP in these countries.

In a traditional sense, a PPP contract is a cooperation agreement between the State and the private sector in infrastructure development investment and public service provision. A part or all parts of the work are implemented by the private sector with the support of the State [2], [3].

In other words, PPP contract is a general concept that refers to all different factors and different approaches of the

cooperation between the State and the private sector. This can also regard some specific form of cooperation between the State and the private sector such as Australia's Public-Private partnership policy, The Japanese Act on Promotion of Private Finance Initiatives (PFI), The Korean Act on Private participation in infrastructure (PPI) [4], or regulations on investment in the form of Build-Operate-Transfer (BOT) in Vietnam [5].

Generally, the PPP contract is a dynamic concept with flexible meanings depending on the approach to the contract under specific circumstances. In Vietnam, BOT contract is one type of the PPP contract. It is applied in the technical infrastructure construction as well as covering all the main aspects of the contract, including legal and finance such as the investment process, subject, authorization, financial nature and the relationship between counterparty of the contract.

In Vietnam, a PPP contract is mainly used in transport infrastructure projects.

II. RESEARCH OVERVIEW

A. Infrastructure

The Oxford English Dictionary defined infrastructure as “a general term that refers to the structural parts, which are the foundation for the development of the economy” [6]. The World Bank commented that this definition was not clear enough and they instead defined the term by indicating the related sectors and arguing that the capital assets to form these sectors are considered as infrastructure. This definition has described more clearly [3], [7].

Additionally, the Public - Private Infrastructure Advisory Facility (PPIAF) brings a more specific definition. According to PPIAF [4], infrastructure consists of “fixed assets which is intended to provide basic services over a long period of time, during which the government plays an important role in one, several or all functions such as planning, design, financing, construction, operation and management by law”.

To summarize, infrastructure in a broad sense includes technical infrastructure (such as dynamic and static transportation systems, power plants, waste treatment plants, etc.) and social infrastructure (such as schools, medical facilities, commercial centers, entertainment services, etc.). The expert group of the National Council of Applied Economic Research of India has determined that the nature of infrastructure is “can be commercialized”, which means

various types of technical and social infrastructure can be implemented through BOT contract and the cost is reimbursed by the revenue from project operation. Each country, as a subject of BOT contracts, has different regulations on the scopes of infrastructure. Some countries such as the UK and India allow both technical and social infrastructure whereas some other countries are cautious in setting limits for these scopes. They only include the technical infrastructure without mentioning the social infrastructure such as schools (dormitories), hospitals, etc.

B. Reasons to develop PPP contracts in transport infrastructure construction in Vietnam

Currently, transport infrastructure in Vietnam is considered a public investment, using public investment capital and the responsibility for providing this form of investment belongs to the state. However, due to high public debt, the limited state budget and the increasing demand for transport infrastructure have forced many governments, including the government of Vietnam, to have no choice but to take advantage of this financial and management capacities of the private sector through PPP investments [8].

On the other hand, to boost the economic development, transportation infrastructure is always the first priority since it helps transport materials to factories and deliver products to warehouses and the market. Also, transportation is necessary for human needs such as travelling, going to work, etc. Therefore, without transport infrastructure, there will be issues regarding the transport of goods, citizens, leading to production and consumption stagnation. As a result, economic development will be seriously affected.

There are key reasons for the necessity of PPP contracts:

- Economic development requires adequate transport infrastructure;
- Current transport infrastructure has not been satisfying;
- Lack of capital from the state budget (public investment), current public investment capital only meets 30-40% of the minimum demand for transport infrastructure;
- Increasing demand for better service quality in transport infrastructure;
- Take advantage of business management capacity of the private sector via a simple investment modal.

C. The market and its role

The market in a traditional understanding is a location where the exchange of goods takes place, starting from the form of exchanging goods for goods to the form of exchanging goods for money. In modern economic terminology, markets are represented by different areas of consumption, namely geographical region, product category and product quality, etc.

From the marketing perspective, market is the set of actual and potential buyers of a product. This concept allows the manufacturers to forecast the market capacity accurately.

From the business perspective, market can be defined in both broad sense and narrow sense.

In a narrow sense: Market refers to a group of consumers whose demands are expected to be met.

In a broad sense: Market is the entire operating environment of the manufacturers and suppliers, including influencing factors and markets.

The influencing factors include: Legal and political factors, economic factors, work factors, psychosocial factors, cultural factors.

Markets include: money market, capital market, goods market, consumer market, and labor market.

By this approach, market is the aggregate demand for a certain type of goods, where the buying and selling activities using currency take place.

In the market economy, the manufacturers must determine the target market in order to sell products.

The market also involves in the production of goods, business and economic management. The manufacturing process includes: production, distribution, exchange and consumption. The market only disappears when the production of goods ceases. It is the "bridge" between production and consumption.

Additionally, it is necessary to conduct thorough market research in order to produce the goods that meet the market demand. The market affects the decision of the manufacturers in term of what to produce, when to produce, cost of goods sold, availability of capital, and production cycle, etc. For this reason, the market is not only a place where the production process begins, but also an influencing factor to the control of cost component since the production must be market-oriented to meet the market demand well. From this perspective, it can be seen that market is the objective of production, it connects the production with the consumption [9].

In other words, the market is the business environment of the manufacturers, a place where the commodity-monetary relations take places. Furthermore, market is a place in which the State implements policies and takes regulatory measures, including environmental issues.

The market will give the most objective view for the manufacturers to assess and adjust their products.

The market is an important factor in economic management as it is the object and basis of planning. With the management mechanism of the commodity economy, the market becomes a tool of the micro policy, a place where the State regulates the business process of the manufacturers.

D. Functions of the market

These are inherent objective impacts, starting from the nature of the market to the reproduction process and socio-economic life. The market has four functions:

- Recognition function is described in two ways:
 - + Buyer's acceptance of goods and services in the market: Investing in the PPP transport infrastructure construction is more profitable than investing in other products over the same period.
 - + Manufacturers' acceptance to produce, supply goods and services to meet market demand: The manufacturers must sell the final products. The sale is implemented through the recognition function of the market. When the market performs this function, it means that the social reproduction of goods is essentially completed. Besides passively acknowledging the results of the reproduction and trading process, the market also controls these processes through the economic laws.
- Execution function: Trading is the largest activity covering the entire market. The market performs its function as a place to exchange goods, equate supply and demand, and implement the law of value, thereby forming the exchange

value of commodity. Exchange value is an important basis for the formation of the product structure and economic ratio relationships in the market.

- Regulatory function: Market demand is the direction and the goal for every production processes. The market is a set of activities conforming to the laws of market economy. Indeed, the market stimulate the manufacturers in technology innovation and product adjustment to better meet the market demand, thereby generating a high working capital turnover. On the other hand, the market also creates a competitive dynamics between manufacturers so that they can continue operating to survive.

Along with the economic laws in the market, consumers must consider their consumption expenditure since the market is a guide to consumer spending.

In the reproduction process, the manufacturers must also determine the suitable cost to be accepted by the social as the market only accepts a level which is equal or less than the necessary level of social. As a result, the market plays an important role in saving labor costs.

- Information function:

One of the most important concepts of economic management is to make decisions, therein the information is crucial for making accurate decisions. The most objective information that fully, accurately reflects must come from the market. Therefore, the information function is important for both manufacturers and consumers.

The economic environment shows all of these four functions. They always closely related to each other and their effects are equally important and simultaneously influence [10].

E. Types of market structure

There are various classifications of market structure. However, from the view of price formation and the production and supply decisions of the enterprises, economics classifies market structure by the level and influence method of suppliers to the commodity's market price. In accordance with this classification, there are three types of market structures (Fig. 1):

1) Perfect competition

Perfect competition includes the following criteria:

- There are many sellers and buyers.
- All firms sell an identical product or service.
- Market participants (buyers and suppliers) have complete or "perfect" information.
- The State or authorities do not control the price of the product.
- There is no barriers to entry or exit, and the firms have no influence on prices [10].
- Market participants are price takers. Suppliers rely on market prices to find the volumes that maximize their profits.
- Suppliers are able to sell their goods or services at the market price - the equilibrium price established based on supply and demand.

Perfect competition is a theoretical market structure.

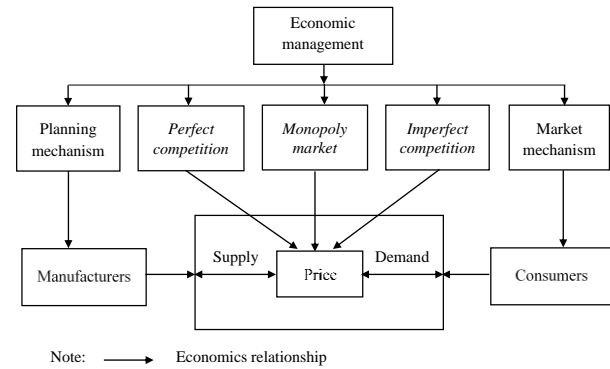


Fig. 1. Types of market structure

2) Monopoly market

Monopoly market (also known as pure monopoly) refers to a single company or group becomes the sole suppliers of a particular type of product or service. Electricity, telephone and telecommunications services, etc. are examples of monopoly market [10].

Monopoly market does exist but not so common.

3) Imperfect competition

Imperfect competition is a common market structure in practice. Most of goods and services markets in the reality are indeed imperfect competition such as construction, energy supply industry.

For Vietnam and other undeveloped countries, the imperfect competition almost covered the entire market. If there is no efficient regulation as well as the combination between macro-, meso- and micro- policies, it will become an obstacle for the development of the country.

F. Transportation construction market

In construction, market plays an important role for investors and construction companies.

- Through the market, construction companies can determine the demand, advanced construction technology, and the capacity of competitors, etc. Afterwards, the companies will make reasonable adjustments to both internal and external factors in order to strengthen their competitive advantages in bidding.

- Through the market, investors can find qualified contractors who have reasonable prices as well as the ability to access to new technology advances in the construction industry, both domestic and abroad [11].

The public-private partnership (PPP) market for transportation construction also has common characteristics of the construction market besides its own characteristics in terms of capital structure, product payment methods, etc. The investors and the State organize bidding for the provision of transport infrastructure, thereby ensuring technical standards, sufficient capacity, etc. In return, the investors are entitled to obtain the revenues from the operation of projects in a certain period to repay or make a profit. They can also receive a land bank whose value equivalent to the value of the bidding package so that the investors can do business in accordance with the laws of the home country [9].

Perfect Capital Markets and Imperfect Capital Market

Nguyen Van Chon [10], mentioned the concept of "Perfect Capital Market" and "Imperfect Capital Market" as follows:

Perfect capital market: A capital market is considered perfect when it meets these following criteria [10]:

- Capital demand is always satisfied and there are no restrictions on funding capacity.
- The loan interest rate and the lending interest rate must be equal (this is not consistent with reality).
- The transparency of the capital market is ensured in all aspects.

Imperfect capital market is in accordance with the criteria of the perfect capital market except rejecting the criterion "loan interest rate must be equal to the lending interest rate". This means that the interest rate paid on loan (negative interest rate convention) is not equal to the return from investment in the capital market (positive interest rate convention) [10].

Market form of public-private partnership in transportation construction

According to the conclusion of the late Professor, Dr. Nguyen Van Chon, the transportation construction market is an imperfect competition since the interest rate paid on loan (negative interest rate) is not equal to the return from investment (positive interest rate). As a provision in the contract (PPP), the State has accepted to pay interest expense for the investors. In addition, the investors can generate fee income from the operation and management process. Thus, the better the management, the higher the profit the investors can earn and vice versa.

Practice has proven that a number of countries have successfully applied PPP contract in road transport infrastructure and Chile is considered as one of the most successful countries. The funding source for transport infrastructure projects in Chile is the bond market in which the PPP infrastructure projects account for 20% of the market size. In United Kingdom, PPP contract accounts for 11% of public investment while the road transport infrastructure account for one-third of the total investment capital of PPP projects in Australia. Thanks to the efficient model and supporting tools, these developed countries have succeeded in the form of PPP investment [12].

Meanwhile, there are also some unsuccessful cases, notably Mexico. In the mid-1990s, the fact that they had failed to apply PPP contract in the toll road system was one of the main reason of the country's currency crisis in the period from 1994 to 1995. This is because the estimation was not good enough as the cost increased by 25% on average and the revenue was 30% lower than expected. In the end, the Mexican government had to take over 23 projects and take a debt of \$5 billion to repay banks and \$2.6 billion to repay construction companies.

In the case of Hungary, the M1/M15 road project was the first toll road in Central and Eastern Europe (1995) in which the schedule and the estimated cost were ensured. However, the traffic flow is 40% lower than expected, so the higher fees could not make up for the low volume of passing vehicles. Eventually, the government had to take over the project [13], [14].

These cases above show that the transportation construction market in the form of PPP investment is an imperfect competition, facing many potential risks if the project planning and management is not carefully conducted.

III. DISCUSSION

A. Reasons to develop public-private partnership (PPP) contracts in transport infrastructure construction in Vietnam

Basically, transport infrastructure in Vietnam is currently considered as public facilities, invested by using the State capital. However, the problem of high government debt, limitations of the State budget and the increasing demand for transport infrastructure have left the Vietnamese government to take advantage of the finance and management experience of the private sector via the form of PPP [7].

There are main reasons for using a public-private partnership (PPP) contract:

- Economic development requires corresponding capacity of transport infrastructure;
- The current transport infrastructure does not meet social demand;
- Shortage of public investment capital;
- The need to improve service quality;
- Taking advantage of the business management skill of the private sector with a simple model.

B. Assessment of the PPP transportation construction market in Vietnam

1) Planning-construction phase

Through the data system and conclusions of the National Assembly Standing Committee (2017), by monitoring, it can be seen that for transportation construction projects in the form of BOT contracts, there are 48 projects approved by the government to allow contractor appointment whereas 21 projects have only 1 contractor, which is difficult to explain [5]. The appointment of contractors makes the project become less competitive and reduces the investment efficiency. In some projects, investor selection process is conducted without satisfying the prescribed conditions since they do not publish the project portfolio and the event information. Examples can be mentioned: Co Chien Bridge on the National Highway No.60; BOT project on National Highway No.1 from km 672+600 to km 704+900 (Quang Binh Province); National Highway No.1 from Phan Thiet to Dong Nai; BOT project from Binh Dinh to Phu Yen, etc. [13]

In the project to expand the National Highway No.1 crossing Khanh Hoa Province (from km 1488 to km 1525), the actual cost was 1,400 billion VND but the total investment was up to 2,700 billion VND. This proved that the management in project planning and approval phase was considerably weak, causing loss of capital and resources.

2) Operation stage

Under inspection conclusion (2016) of Vietnam General Department of Roads, on the Phap Van - Cau Gie highway, BOT toll stations collected nearly 2 billion VND per day but the reported number was only 1.2 billion VND. There was frauds at some toll stations such as Dai Yen station on the National Highway No.18, Km 18+100 of the National Highway No.5.

After auditing the Co Chien - Tra Vinh BOT project, many frauds were detected in the final settlement and the toll collection period was reduced from 20 years to 14.5 years.

In 2016, the Ministry of Transport inspected more than 70 active BOT projects and decided to discount the fees for

vehicles class 4 and 5 (high load capacity and high fees) of 35 projects. This action shows that the State has not managed well in appraising the project before signing the contracts with the private partners [13].

With the current transportation construction market of Vietnam and other countries in the region, it can be concluded that the market is a combination of imperfect competition, monopoly market, by the following factors:

- The State or the authorities still control the price.
- Market participants do not have adequate information about the market.

- There is no separate roles between the role of the State and private sector in management. This would likely cause investment loss as well as conflicts of interest between investors and the State, making the investment become less attractive.

Many construction projects have only one seller (investors) and one buyer (the State), so they have to appoint contractor. During construction, investors appoint construction contractors, supervision consultants, material and equipment suppliers, etc. As a result, there can be many potential risks in terms of quality, cost, etc.

The contractor appointment method will reduce the competitiveness and lead to change in market prices. As a result, this creates a monopoly market. This does not correspond to the nature of construction activities, which will constrain the development of manufacturing.

C. Solutions for implementing PPP projects

According to Le Manh Tuong et al (2021) [15], the application of product quality planning follows the model in Fig. 2.

In order to implement the PPP investment model successfully (with the desired quality), the all three frames described in the model must be balanced.

Frame 1 (X) axis - Legislative system (promulgated by the National Assembly)

Frame 2 (Y) axis - The system of sub-law documents such as decrees, circulars, standards, regulations, etc. (promulgated by the Government, Ministries, competent authorities)

Frame 3 (Z) axis - The procedure of organization, implementation, supervision, inspection and control the entities that directly implement the project (Competent authorities, investors, consultants).

This means that if the whole system is balanced as per the dynamic law, the PPP project will achieve the desired quality/success (the quality here means that the project ensures both economic and social goals).

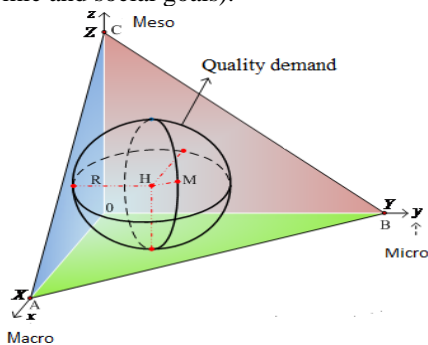


Fig. 2: Product quality planning model in 3D coordinates with $X > 0$, $Y > 0$, $Z > 0$ [15]

The value of quality demand maximizes when all three frames reach the same value, or $X = Y = Z$ or all three frames are balanced [15].

TABLE I: VARIATION OF QUALITY DEMAND WITH THE THREE FRAMES

No.	Characteristics, Constrains	Conclusions
1	Positive correlation of quality demand	Quality demand increases when there is at least one frame increase.
2	Weak frame	If there is at least one weak frame, the desired quality demand may be difficult to achieve. In other words, to reach the desired quality demand, all frames must reach a minimum value.
3	$X+Y+Z \leq m$, with $m > 0$.	The quality demand maximizes when all of the three frames equal.

As a result, it would be hard to consider the PPP transportation construction market as a perfect competition. Instead, it should be considered as an imperfect competition. The successful development and implementation of the PPP contract in transport infrastructure construction will bring socio-economic efficiency. To achieve this goal, it is necessary to ensure the following conditions:

- It must be determined that the PPP investment is a form of public investment, with a specific funding sources. The payment method for the investors also has its own characteristics, that is the payment is made in cash in the concession period through the operation or in land bank for investors to do business.

- There should be consistency amongst the three frames: The National Assembly; the Government, Ministries, Departments; other related parties.

- The investors must be guaranteed to earn a minimum profit within a certain range using the established conventions of each country.

- A sufficient funding must be ensured to pay for the investors as they proposed the project but they did not win the bidding.

- There should be agreement in the risk sharing mechanism between the State and the private sector to achieve a win-win situation for both sides.

- The State capital must be required in the PPP projects.

- The responsibilities of the State and investors should be clearly defined so that there are suitable sanctions to handle situations occurring during the preparation, implementation and operation of PPP projects in general and BOT projects in particular.

- International bidding are encouraged and the State should have preferential policies for foreign contractors.

- The transparency must be ensured in all of the processes from the proposal, planning, investor selection phase to construction and operation phase of PPP projects.

- Once the PPP has been identified as a separate investment channel with independent financial resources, it must be allocated as a manufacturing industry through medium-term capital for project planning and payment to investors when implementing the project.

+ At the State level: it is necessary to establish an organization under the Government to direct and regulate the PPP activities to ensure the transparency as well as fully provide the accurate information to domestic and foreign investors. At the same time, this organization must supervise the conformity to law of competent authorities and investors.

+ At the local level: The PPP committees must be established under the People's Committees of provinces and cities in order to professionalize the PPP activities as well as coordinate and direct local competent authorities to determine the responsibilities of each party, thereby attracting more investment.

V. CONCLUSIONS

Although PPP investment market has appeared in Vietnam for more than a decade and created significant effects, there have been issues to be considered in satisfying the targets. Many studies were conducted to determine the causes, they did not directly mention the issues regarding internal sources, or the underlying subjective causes including:

Macro-level: The laws and policies have not been practical enough for PPP investment form, leading to significantly reducing the investment attractiveness.

Meso-level: The system of sub-law documents has not well performed its duty as a driving force for the investment. During the project planning, the quality is not acceptable. Other stages of the project such as construction, operation, supervision exposed to many issues including lack of transparency, contract violations, law breaking, etc.

Micro-level: The parties participating the PPP investment do not comply with laws and sub-law documents. The state management is not active enough in executing its duties in controlling the projects.

As a result, investment projects are completed in low quality, investment attractiveness is reduced. Actions must be promptly taken so that the PPP investment can be successful and transportation infrastructure is able to become better, contributing to social-economic development in Vietnam.

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