

Government's Roles in Public Private Partnership Toll Road Projects

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Abstract: *This research aims to investigate critical factors of the government's role in achieving success in Public Private Partnership (PPP) toll road projects in Indonesia according to government and private sectors' perceptions. A preliminary interview Subsequently a questionnaire survey was also conducted involving 143 respondents across the two sectors from eight operating toll were five critical factors of the government's roles in achieving success in PPP toll road projects, namely; "Active involvement in overall project stage activities", "Establishment of good bureaucracy", "Provision of conducive environment", "Appropriate project planning and competitive tendering" and "Provision of appropriate government support and supervision". This research finding is expected to assist the government in defining clear roles and underlying responsibilities in development of PPP toll roads in Indonesia.*

Keywords: *Public Private partnerships (PPP), Indonesia, toll road projects, government's roles, factor analysis*

I. INTRODUCTION

Public Private Partnerships (PPP) as a procurement route have been well implemented in many developed countries such as America, Australia and Europe. However, the successful implementation of PPP is not equally distributed in all places [1]. Indonesia is a country that has been implementing PPP models in its infrastructure development, in particular for toll roads, since the 1990s, where most projects are designed with PPPs, [2]. Unfortunately, the results are not satisfactory. Even though toll roads have been built since 1978, currently Indonesia operates only about 800 km of toll roads [3].

The factors influencing PPP project performance have been widely explored. For example, there have been several papers presenting critical success factors and criteria [4,5,6,7,8], risk identification and allocation [2,9,10,11], and barriers and impeding factors [12-14]. However, it is not sufficient to only recognize the above attributes or factors without providing information on whom should mainly contribute to realizing or avoiding the required conditions for successful implementation of PPP projects.

Experience shows that government has a very important role in either success or failure of PPP project implementation [15]. Government is the main actor that has a better position than any party, such as the private sector, to provide a conducive environment for successful PPP implementation such as legal, political and economic conditions [12]. For that reason, research that focuses on investigating the government's roles in realizing the success of PPP projects is very important to guide better implementation of PPP projects.

While several papers propose government's roles in PPP projects [12,15,16,17], there is still disagreement among scholars regarding the importance of government's role attributes. In addition, there is still a lack of comprehensive investigation of the government's roles in PPP projects, especially in PPP toll road projects within Indonesian context. This research therefore aims to comprehensively investigate critical factors in the government's roles in achieving PPP toll road project success in Indonesia based on PPP project actors' perceptions, namely the government and private sectors.

II. LITERATURE REVIEW

The importance of the government's roles in the published PPP literature was first introduced in 1998 [17]. This identified five important roles that needed to be conducted by government in order to achieve PPP project success, namely: Determination of project viability (selection of the right project in terms of its technical, economical, and socio-political viability), Selection of right procurement method, Determination of a tender evaluation mechanism to select the best proposal, Contractual arrangements to allocate risk and Controlling the project to make improvements for better project implementation.

However, these government's roles have not been perceived as sufficient for successful PPP project implementation. Based on several case studies of the success and failure of PPP projects in Asia, additional government roles in PPP projects have been proposed [15]. These attributes consist of: Providing a stable political environment, Developing domestic capital markets, Presenting adequate legal and regulatory frameworks, Selecting feasible projects, Win-win principle (fair risk sharing allocation), Conducting competitive bidding pro-

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cess, Implementing a smooth land acquisition process, Providing appropriate guarantees, Respecting the contractual agreement to maintain the state's credibility, and Being actively involved and continuously evaluating the project performance in the overall project stages.

Other research highlighted that government's roles should be implemented to at least five main important roles: Provision of adequate legal and regulatory frameworks, Determination of central coordinating governmental authority for managing PPPs, Establishment of supportive governmental authorities, and Determination of clear division of responsibilities between parties involved in the project [12]. Meanwhile, other studies argued that the government's roles should consist of several main roles: Creating a favorable investment environment, Establishing adequate legal/regulatory frameworks, Establishing a coordinating and supportive authority, Selecting a suitable concessionaire, and Being actively involved in the project life-cycle phases [16].

Although, there is still disagreement among scholars regarding the importance of government role's attributes, these previous researches have provided a preliminary description of the importance of government's roles in achieving a successful PPP project. Considering that PPP is a very complex project type involving many parties with large-scale activities, it is possible that there is still several government role attributes that have not been covered in these previous studies.

III. RESEARCH DESIGN

Several steps were conducted in this research: identification of research variables or attributes from the literature, a preliminary survey, a pilot test, the main survey, and data analysis. As research in government's roles in PPP projects has not been widely been undertaken, identification of the research attributes was conducted in a literature review such as, for example, the literature on driving and impeding factors for PPP projects, risk in PPP projects, and PPP project success factors. Furthermore, from these literatures several roles that government needs to conduct to manage risk and to promote success were identified and 3 attributes of the government's role in PPP toll road projects as depicted in Table I were recognized.

In order to verify the attributes within Indonesia PPP toll road projects, a preliminary survey through a structured interview involving 12 experts was conducted. Following the preliminary survey, the main survey involving government and private sectors was conducted through questionnaire distribution to get a comprehensive understanding of the stakeholders' perceptions regarding the government's roles in PPP projects. Prior to the main survey, several pilot tests for both sectors were performed to ensure the respondents' understanding of the questionnaire. Several refinements to the questionnaire were made as a result of the pilot test. The questionnaire was developed using closed-ended Likert's Scale questions ranging from 1-5, where 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree) and 5 (Strongly Agree).

The target respondents for the main survey were government and private organisations' staff who were involved in or participated in toll road projects' development, in the early phase or during the project initiation, planning, and construction. Meanwhile, the Government sector included government organizations or officials in several sectors that were related to toll road development such as Indonesia Toll Road Authority (BPJT), Ministry of Public Works, Ministry of Transportation and Ministry of Environment. It also involved government staff from the national, provincial and district levels. Meanwhile, the private sector consisted of the toll road operators' staff (concessionaire), project consultants, contractors and sub-contractors. Questionnaires were delivered by means of three administrative methods, namely hand delivery, postal and email delivery.

TABLE I
 IDENTIFICATION OF GOVERNMENT'S ROLES IN PPP PROJECTS

No	Government Roles	Source
1.	Provision of stable and conducive political condition.	[15, 16].
2.	Provision of stable and conducive economic condition.	[12, 15, 16]
3.	Simplification of bureaucratic procedures.	[7, 9,12].
4.	Law and regulation enforcement	[12, 16, 24].
5.	Corruption eradication	[10,12,15] .
6.	Selection of a feasible PPP project	[6,15,17].
7.	Selection of appropriate concessionaire.	[12,15,16,17]
8.	Provision of appropriate government's support and guarantees.	[12, 15,16, 17]
9.	Realization of smooth land acquisition process.	[9,10,15].
10.	Solving social problems regarding community aspiration.	[9,10].
11.	Supervision in construction stage.	[12, 15,16].
12.	Supervision in operational stage.	[12,15, 16] .
13.	Development of good communication with private sector to minimize dispute.	[12,15,16] .

We selected eight toll road projects from BPJT's website on Java Island as the densest population in Indonesia [18]. They were Waru-Juanda, Semarang-Ungaran, Kanci-Pejagan, Jakarta Outer Ring Road (JORR) W1, Ulujami-Serpong, JORR E1, JORR E2 and Cipularang. The selection was based on criteria that the toll roads was operational during the data collecting process rather than projects that were under construction as a more comprehensive assessment the project performance would be possible by all stakeholders. The data was then analysed using factor analysis to identify underlying factors regarding the government's roles in PPP toll road projects. Factor analysis is a technique to reduce a large number of research attributes by producing some critical factors to make them easier to understand [19]. IBM Statistical Package for Social Science (IBM SPSS) version 22 was employed to conduct the analysis.

IV. DATA ANALYSIS RESULT

A. Respondents Background

A total of 143 valid responses were obtained from the main survey with 70 responses from the government sector (48.95%) and 73 from the private sector (51.05%). Waru-Juanda project had the highest number of respondents (54.9%). Based on the level of education, most respondents had bachelor degrees (50%) and they mostly had an engineering background (77.1%).

B. Reliability Test

Cronbach's Alpha or Alpha coefficient was employed to examine the consistency of the questionnaire used for data collection. The value of Alpha coefficient ranges between 0 and 1 and a common rule of thumb suggests 0.7 as the threshold for an acceptable result [19]. The result revealed that the Alpha coefficient was 0.743 which means that the questionnaire is reliable.

C. Factor Analysis

The total sample size of 143 was more than a minimum sample size for the factor analysis which is 100 samples [19]. The Kaiser-Meyer-Olkin (KMO) value should be greater than 0.5 in order to be eligible for factor analysis [20]. The result showed KMO test was 0.756 that means the sample is suitable for factor analysis.

Principle Component Analysis (PCA) with Varimax rotation was then applied to find out the factor analysis with the intention in summarizing the information represented by the attributes using a small numbers of factors [21]. The results can be seen in Table II. The eigenvalue required is greater than one which means that only variables with at least one eigenvalue will be maintained. From these results it appears that the factor loading of each attribute value is greater than 0.5 which is considered acceptable [20]. No attributes was dropped due to low loading factors.

The table also shows five factors derived with a total variance explained of 74.273%. The factor analysis formed five groups of factors, namely (1) Active involvement in overall project stage activities, (2) Establishment of good bureaucracy, (3) Provision of a conducive environment, (4) Appropriate project planning and competitive tendering, and (5) Provision of appropriate government support and supervision. These five factors will be explained in the discussion part.

V. DISCUSSION

The first factor, "Active involvement in overall project stage activities" accounted for 22.042% of the total variance consisting of four attributes, namely "Appropriate supervision in construction stage", "Development of good communication with private sector to minimize dispute", "Solving social problems regarding community aspiration", and "Realization of smooth land acquisition". It stresses that government should be actively involved in all stages

and to always monitor project performance to ensure that the project meets specified targets and quality [15,16].

TABLE II
 FACTOR ANALYSIS RESULTS

ID	Attributes of Government's Role in PPP Projects	Factor Loading	% of variance explained	Cumulative % of variance
F1	Active involvement in overall project's stages.			
11	Appropriate supervision in construction stage	0.905	22.042	22.042
13	Development of good communication with private sector to minimize dispute.	0.836		
10	Solving social problems regarding community aspiration.	0.829		
9	Realization of smooth land acquisition process.	0.608		
F2	Establishment of good bureaucracy.			
5	Corruption eradication	0.865	17.581	39.623
4	Law and legal enforcement	0.792		
3	Simplification of bureaucratic procedures	0.763		
F3	Provision of a conducive environment.			
2	Provision of stable and conducive economic condition	0.890	13.045	52.668
1	Provision of stable and conducive political condition	0.767		
F4	Appropriate project planning and competitive tendering.			
6	Selection of a feasible PPP project	0.790	11.209	63.877
7	Selection of appropriate concessionaire	0.687		
F5	Provision of appropriate government support and supervision.			
8	Provision of appropriate government's support and guarantees.	0.856	10.396	74.273
12	Appropriate supervision in operational stage	0.606		

In addition, although principally in the PPP schemes the government has appointed the private sector to implement the project, this is not sufficient for the host government to only select the concessionaire and subsequently pass as much risk as possible to the private party and just wait and see for the best outcome. Government needs to supervise over the overall project life, including in the construction stage as many critical activities occur in this phase. It has been found that imperfect legal and supervision systems are PPP risks that are better handled by the public sector or government [9]. Therefore, it is the government's role to ensure that construction activities cause minimal interference or negative effects to the environment and community activities.

The government also needed to maintain good communication between any parties involved as the

success of the project depended on good communication and proper information between the parties involved [2]. Poor project coordination between government and the private sector is one of the reasons that many urgent energy and transportation projects under PPP scheme failed [15]. Good project coordination could be realized if there is good communication between any parties involved especially between the government and the concessionaire. Developing good communication is important for implementing good project coordination and reducing potential disputes between any parties involved [16].

Furthermore, government needed to handle public or community aspirations regarding the project development with an appropriate approach. Community support is very important for successful infrastructure project development. Failure to accommodate community aspirations as part of the project would cause stakeholder opposition that potentially resulted in project failure [22, 23]. Community participation is a good channel to solve this problem, which could be done by listening and accommodating their interests in the project development [23].

Moreover, the government should also realize a smooth land acquisition process. Currently land acquisition has become one of the main challenges in PPP toll road development in Indonesia [24]. This problem also happened in several BOT road projects in Bangkok, Thailand and Guangzhou, China, which caused project delays [14]. It is the host government's role to smooth the land acquisition process so it will not cause time and cost overruns. Within the Indonesian PPP project context, government is the main actor for the land acquisition process and is represented by the Land Provision Committee (P2T) [24].

The second factor, "Establishment of good bureaucracy" accounted for 17.581% of the variance and it comprises three attributes namely: "Corruption eradication", "Law and regulation enforcement", and "Simplification of bureaucratic procedures". They are very important for successful PPP implementation. Several variables have been identified as barriers to PPP projects that is bureaucratic procedures, too many institutional players, and risks due to poor local governmental administration and corruption [12]. Corruption has been considered as a factor that heavily influences infrastructure development [25]. Meanwhile, Law and regulation enforcement was also thought to be a hindrance in the process of land acquisition [26].

It is therefore very important for the host government to establish a simple and easy bureaucratic system, to eradicate corruption and to make sure every person has an equal position under the law. By establishing a reliable bureaucracy, a smooth and fast approval process can be executed for time and budget efficiency. Conversely, too many problems in the bureaucratic system will make every step longer which will finally lead to budget increases and project completion extensions of time. As a consequence, this condition will also influence

private sector interest as it will increase its business risk in PPP infrastructure project investment.

The third factor was "Provision of a conducive environment, which accounted for 13.045% of the variance and consisted of two attributes, namely "Provision of stable political condition" and "Provision of economical condition". Conducive political and economic conditions are very important for almost all businesses, including PPP toll road projects. A stable political and economic condition is a prerequisite for the success of PPP projects over the project life cycle. Private sector willingness to participate in PPP infrastructure projects greatly depends on the environment where the projects will be operated [6]. Investors will always consider political and economic conditions of any host country because PPPs are long-duration partnerships which increase business risk levels.

The fourth factor "Provision of appropriate project planning and competitive tendering" accounted for 11.209% of the variance. It constitutes two attributes "Selection of a feasible PPP project" and "Selection of the appropriate concessionaire". Government should be able to choose a feasible project to offer to the private sector, for example, there are real needs and market demands as well as acceptable financing for this project, to ensure continuity of performance in the long-term [16]. Accuracy in selecting the project will enable the attraction of private investors as they are only interested in projects that are profitable [5].

Besides that, government has to select an appropriate developer or concessionaire, as failure to do so increase the chance of unsuccessful projects. In order to select an appropriate concessionaire, government should perform in a fair and transparent environment to realize a competitive tendering process [15] so the selected winner is the company that best meets the project criteria. Therefore, the competitive tendering process is critical for PPP success as it is through this process a project concessionaire is selected [6].

The fifth factor, "Provision of appropriate government support and supervision", accounted for 10.396% of variance. It consists of two attributes, namely "Provision of appropriate government support" and "Appropriate supervision in operational stage". PPP projects have higher risk than traditional projects so that private sector will be thinking very carefully about investing in PPP projects. In order to attract private sector involvement, the host government needs to provide support or a guarantee to minimize the private sector risk. This can be realized in several ways such as tax incentives, and flexibility in tariff/rate adjustment [16]. Last but not least, appropriate supervision in the operational stage also must be done to ensure that service quality of toll roads is really as expected. Good service quality of service is one of the ultimate goals of applying PPP schemes that is achieving better value for money [27].

VI. CONCLUSION

It was found that there were 13 important attributes of the government's role in achieving PPP toll road projects according to government and private sectors' perceptions. These attributes can be categorized into five major categories, namely "Active involvement in overall project's stages", "Establishment of good bureaucracy", "Provision of a conducive environment", "Appropriate project planning and competitive tendering", and "Provision of appropriate government support and supervision". This research contributes to the existing body of knowledge by developing and expanding the existing attributes of the government's roles that have previously been introduced. However, this research also has limitations due to only covering the government and private sectors and has not involved other stakeholders' perceptions, such as the community. Further research based on all the stakeholders' perception will be very useful to provide a more comprehensive picture of this issue.

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