

PUBLIC PRIVATE PARTNERSHIPS FROM THE POINT OF VIEW OF LARGE CONSTRUCTION COMPANIES

ANTONIO COSIMO DEVITO¹, DAVID ARDITI², and ARIE GOTTFRIED¹

¹*ABC Dept, Politecnico di Milano, Milan, Italy*

²*Dept of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology,
Chicago, IL, USA*

Stringent budget constraints and the need to build infrastructures have resulted in Public–Private Partnerships (PPP) being acknowledged as a desirable delivery/financing system for public projects. A PPP is an agreement between a public agency and a private consortium that allows the financing, design, construction, and operation of large scale infrastructure. While the public agency can be a single government department (e.g., a highway department), the private consortium is composed of several parties including contractors, designers, financial institutions, and other investors. The party that plays a critical role in the consortium is typically a large construction company. Various researchers have identified some of the critical factors that affect the success of a PPP, but only few studies have undertaken a comprehensive examination of financial issues. This paper aims to fill this research gap by analyzing information collected from large construction companies pertaining to financial issues. A structured questionnaire survey was administered to the largest 190 international construction companies listed by *Engineering News–Record* to investigate the relative significance of 19 financial issues that were identified in a thorough review of the literature. The findings indicate that factors such as inappropriate financial analysis, a low rate of return, and long delays in reaching financial closure have a high impact on the success of PPPs. Moreover, the public agency’s tendency for corruption and the private consortium’s weak financial standing can also undermine the financial strength of the arrangement. The findings can be used by all participants in PPPs to evaluate the financial issues in such projects.

Keywords: Project delivery/financing systems, Financial factors, Success measures, Management of PPP projects, Large contractors, Private consortia.

1 INTRODUCTION

Different types of public procurement have been used in worldwide infrastructure development over the years. Among these, Public–Private Partnerships (PPPs) is seen as a pragmatic tool for the provision of infrastructure development and delivery of public service when the government does not have the required budget to cover the capital cost (Xie and Ng 2013).

PPPs are agreements between entities in the public and private sectors. The public partner, usually a government agency, establishes project requirements and sets the tender to choose the private consortium. The private partner usually is a consortium of

designers, construction companies and lenders. It finances, designs, builds, and operates the public asset. In this venture, construction companies cover an important role because they must have the necessary skills and expertise to deliver the asset according to the public agency's requirements. Furthermore, construction companies must enjoy sound finances in order to manage risks that can occur over project progress, and provide cost effective facilities/services (Zhang 2005a).

In light of these considerations, the objective of this paper is to investigate construction companies' perspective about the major financial issues in PPPs by surveying the larger construction companies involved in PPP projects in the past.

2 RESEARCH METHODOLOGY

This study combines a literature review and a questionnaire survey to collect data on the financial aspects of PPPs. The research methodology involved three steps: (1) identifying the financial issues encountered in the literature. These issues are summarized in Table 1 (Devito *et al.* 2016); (2) administering a questionnaire survey to the largest international construction companies; and (3) analyzing the data collected.

Table 1. Financial issues in PPPs.

Macro-Category	Financial Issue
Unattractive financing systems	Inappropriate financial analysis, Unappealing financial package, Weak commercial arrangement, Shorter concession period, High equity to debt ratio, Low tolls or tariffs, Lack of appropriate toll/tariff adjustment mechanisms, Low net present value of toll/tariff revenues in the concession period, inadequate total investment schedule.
Adverse financial market	High and variable interest rates, Low rate of return and restriction on the cap, Weak local financing and high financial service charges.
High transaction costs and delays	High transaction cost, Long delay in reaching financial closure and long time in construction.
Financial weakness of the public agency	Weak financial commitment of the public agency, Corruption and bribery, No government control on tolls/tariffs.
Financial weakness of the private consortium	Weak financial commitment of the private consortium, Weak financial standing of the private consortium.

The questionnaire survey was designed to rate the impact of the financial issues listed in Table 1 on the success of a PPP project as perceived by construction companies. The survey was administered in May 2015 – June 2015 using a data collection platform called SurveyMonkey (2015). The target respondents were selected from the top 225 construction companies listed by *Engineering News-Record* (ENR 2015) that have been part of PPP projects. Of these 225, only 190 had a "Contact Us" or "Board Members" section in their website that made it possible to collect 1,186 email contacts that were sent emails with a link to the questionnaire.

The questionnaire was organized in two sections. Section I was composed of five sets of questions, one for each financial macro-category listed in Table 1. These questions asked to evaluate the impact of financial issues on PPP success according to a

Likert scale (1931) of 1-5, where 1 was "very low impact", and 5 was "very high impact". A "don't know" alternative was also available. Section II asked information about the respondents such as years of experience with PPPs, and the types of PPP projects in which the companies had been involved.

3 SURVEY FINDINGS

Sixty-five respondents responded to the survey, a response rate of response rate of 5.50%. This rate of response is not high but is acceptable for an exploratory survey of this nature. The respondents were from 16 different countries out of the 32 listed by ENR, a rate of 50% (Table 2). All respondents were from construction companies with a good knowledge and experience in PPPs. Indeed, the majority of the respondents reported being involved in PPP projects for more than 10 years. They have mainly been involved in PPP projects relative to transportation and public facilities (Table 3).

Table 2. Countries represented in the survey.

Country	Number of respondents
Australia	2
Belgium	1
Brazil	1
Canada	7
China	1
Egypt	2
Greece	1
India	4
Italy	11
Korea	1
Malaysia	1
Netherlands	1
Spain	6
Turkey	2
United Arab Emirates	2
United States of America	12
Not specified	10
Total	65

Table 3. Types of PPP projects represented in the survey.

Type of PPP project	Number of respondents
Transportation	35
Public Facilities	34
Environment	23

*Some respondent companies were active in more than one type of PPP project

Each respondent expressed a judgment based on experience. Only issues rated 4.00 or higher (i.e., "high impact" and "very high impact") are considered for discussion in the following bullets. The survey findings are the followings:

- 1) Looking at the responses to the first set of questions about the financing system, the three most important financial issues that received the highest average ratings are: inappropriate financial analysis (4.34), unappealing financial system (4.02), and weak commercial arrangement (4.02). The average rating of "inappropriate financial analysis" was expected to be high as it agrees with the findings of Zhang's (2005b) and Yuan *et al.*'s (2012) studies which showed that this issue, being related with costs and revenues, is focused on assessing the project from an investment point of view. Therefore, a private company cannot understand the viability of the project if the finances are not analyzed properly. As far as the other two financial issues are concerned, the risk of getting into extensive negotiations is higher when the financial package is not appealing and when the commercial arrangement is weak. These risks scare construction companies because negotiations lead to delays and increased costs.
- 2) With regard to financial markets, there is only one issue rated to have high impact on PPP success: "low rate of return and restriction on the cap" with an average rating of 4.03. Li *et al.* (2005) underlined the importance of having an attractive market for the PPP project. This condition is feasible only if unstable interest rates and strict restrictions on the cap are prevented. Furthermore, the public agency should not promulgate special regulations that undermine the economic growth of the country because it could have an effect on user behavior and on the rate of return of a project. According to Harris (2004), if the rate of return is low, the private consortium may use its resources and skills on other more appealing projects.
- 3) Concerning transaction costs and delays "long delay in reaching financial closure and long time in construction" is rated at 3.95 very close to "high impact". As stated by Zhang (2005b), delays may pose a major risk to the private consortium because the actual profitability of the project is reduced. The construction company will be compelled to postpone the operational phase of the facility, hence postponing the possibility to cover the debt from the cash flow of the project.
- 4) With regard to the critical aspects of the public agency, the issues with a high impact on the PPP success are "corruption and bribery" with an average rating of 4.32 and "weak financial commitment of the public agency" with rating of 4.12. The first finding is consistent with the study conducted by Hwang *et al.* (2013) who showed the importance of sharing the "corruption and bribery" risk among the stakeholders, which implied that the private consortium should play an important role in developing a transparent procurement without corruption. The second finding reveals the construction company's concern about engaging with public agencies with a weak financial commitment. A lack of sound finances in the public agency undermines the willingness of private consortia to take part in PPPs.
- 5) Looking at the last macro-category, the only issue rated at as having high impact on PPP success is "weak financial standing of the private consortium" with an average rating of 4.11. This result is similar to Zhang's (2005b) finding. Furthermore, another issue in this macro-category, "weak financial commitment of the private consortium" received an average rating of 3.98, very close to "high impact".

Actually, the two issues are linked to each other. A private consortium’s weak financial standing influences the financial evaluation conducted by banks. Banks have to assess a construction company’s financial strength because, having to protect their investment, banks are focused on the guarantees of the debt repayment. An inappropriate financial standing compromises the likelihood to obtain external financing, hence inevitably reducing the financial commitment of the private consortium.

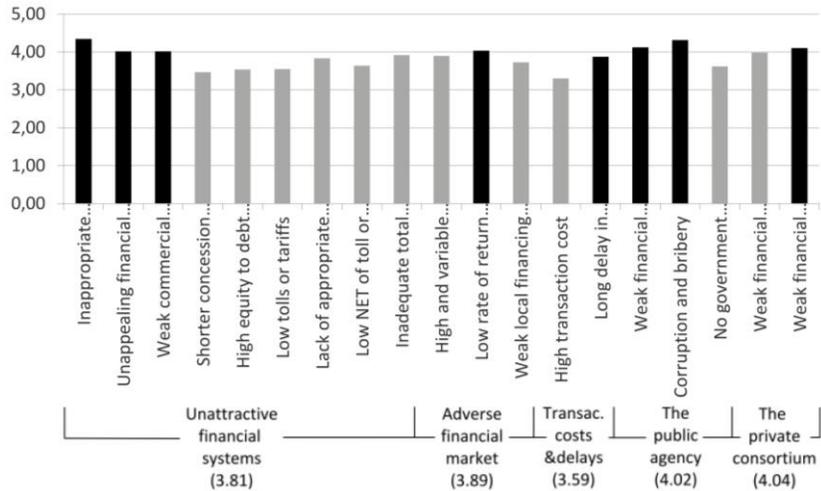


Figure 1. Weighted average impact ratings of financial issues on PPP success.

4 CONCLUSION

This paper presents the findings of a questionnaire survey administered to the largest international construction companies listed by *Engineering News-Record*. The questionnaire dealt with 19 previously identified financial issues in PPP implementation. The relative impact of each financial issue within each macro-category has been determined based on the respondents' judgment and experience.

As seen in Figure 1, the findings show that the financial issues with a high impact are: inappropriate financial analysis, unappealing financial package, weak commercial arrangement, low rate of return and restriction on the cap, long delay in reaching financial closure and long time in construction period, weak financial commitment of the public agency, corruption and bribery, weak financial standing of the private consortium. Overall, these issues are rated at an average level greater than 4.00 (i.e., “high impact” or higher).

According to the information presented in Figure 1, two of the five macro-categories, received average ratings higher than 4.00 (high impact on PPP success): "financial weakness of the private consortium" (4.04), and "financial weakness of the public agency" (4.02). This is no surprise because the strong financial position of the two main actors in PPPs should be conducive to the success of the project. Actually,

the remaining macro-categories are quite dependent of the financial standing of public agencies and private consortia. For example, a weak financial standing of either party can create uncertainties that could make financial analysis difficult to perform, resulting in unreliable outcomes. Financial uncertainties could also affect the competition in the marketplace, and increase transaction costs and delays. It can therefore be concluded from this study that an important prerequisite for the success of a PPP is the strong financial standing of the two main parties in the PPP organization, i.e., the public agency and the private consortium.

The financial issues revealed by the questionnaire survey as having high impact on PPP success should be recognized by all stakeholders in PPP projects. It is possible to achieve success in PPP projects if financial issues are recognized and managed effectively.

Acknowledgments

The names and email addresses of potential participants that were used in the survey of large construction companies were provided by Rushit Thakkar, a former graduate student in the Construction Engineering and Management Program at IIT. Rushit Thakkar's support is gratefully acknowledged.

References

- Devito, A. C., Arditi, D., and Gottfried, A., Financial Issues in Private Public Partnerships, in *Interaction between Theory and Practice in Civil Engineering and Construction*, Komurlu, R., Gurgun, A., Yazdani, S., and Singh, A. (Eds.), Istanbul, Turkey, 2016.
- Engineering News-Record, 2015, retrieved from www.enr.construction.com/toplists/sourcebooks on April 1, 2015.
- Harris, S., Public Private Partnerships: Delivering better infrastructure services, *Proc. Conf: Investment in Infrastructure in Latin America and the Caribbean: Second Generation Issues and Perspectives*, Inter-American Development Bank, Washington, D. C., 2004.
- Hwang, B. G., Zhao, X., and Gay, M. J. S., Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors, *International Journal of Project Management*, 31(3), 424–433, 2013.
- Li, B., Akintoye, A., Edwards, P. J., and Hardcastle, C., Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the U.K.: Findings from a questionnaire survey, *Engineering Construction and Architectural Management*, 12(2), 125–148, 2005.
- Likert, R., *A technique for the measurement of attitudes*. Archives of Psychology, Columbia University Press, New York, USA, 1931.
- SurveyMonkey, 2015, retrieved from www.surveymonkey.com on June 30, 2015.
- Xie, J. and Thomas Ng, S., Multiobjective Bayesian Network Model for Public-Private Partnership Decision Support, *Journal of Construction Engineering and Management*, 139(9), 1069–1081, 2013.
- Yuan, J., Wang, C., Skibniewski, M., and Li, Q., Developing Key Performance Indicators for Public-Private Partnership Projects: Questionnaire Survey and Analysis, *Journal of Management in Engineering*, 28(3), 252–264, 2012.
- Zhang, X., Criteria for Selecting the Private-Sector Partner in Public-Private Partnerships, *Journal of Construction Engineering and Management*, 131(6), 631–644, 2005a.
- Zhang, X., Concessionaire's Financial Capability in Developing Build-Operate-Transfer Type Infrastructure Projects, *Journal of Construction Engineering and Management*, 131(10), 1054–1064, 2005b.