Contractors' Perspective on Critical Factors for Successful Implementation of Private Public Partnerships in Construction Projects in Uganda

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ABSTRACT
Developing countries like Uganda are in dire need of infrastructure development and some countries are venturing into Private Public Partnerships (PPPs). In Uganda for example, the ministry in charge of finance has been trying to find ways of implementing projects funded using PPP arrangements. PPPs are risk sharing investments in the provision of public goods and services, seen by governments as a means to launch investment programs, which would not have been possible within the available public-sector budget, within reasonable time. However, there is no in-depth analysis of the critical factors that are likely to affect the success of PPP projects in Uganda. The objective of the present paper is to address the aforementioned gap and contribute to the knowledge base of success factors for PPP projects in developing countries using Uganda as a base for data collection. Success factors were identified from the literature and validated using interviews with the relatively big contractors. Using a questionnaire survey on managers of construction firms, the factors were rated. The factors were then ranked using the Coefficient of Variation on availability and ease of improvement of the factors for their ratings. Lack of projects that are technically, economically and socially viable are the most critical factors to address. The PPP policies being proposed and about to be implemented should take into account the major factors identified.

Keywords: Factors, Infrastructure, Private Public Partnerships, Uganda

1.0 INTRODUCTION

Developing countries like Uganda are in dire need of infrastructure development and some countries are venturing into Private Public Partnerships (PPPs). The multi objectives of PPPs, including promoting infrastructure development, developing local economy, reducing costs, increasing construction and operation efficiencies, and improving service quality by incorporating the private sector's knowledge, expertise and capital have drawn increasing interest from policy makers, researchers and the industry practitioners. In Uganda for example, the ministry in charge of works and transport has been longing for development of PPP funded infrastructure projects.

PPPs are risk sharing investments in the provision of public goods and services, seen by governments as a means to launch investment programs, which would not have been possible within the available public-sector budget, within reasonable time (European Investment Bank, 2005). The Canadian Council for PPPs defines PPPs 'a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards (Grant, 1996). In developed countries, the involvement of the private sector in the development and financing of public facilities and services has increased substantially over the past decade (Li *et al.,* 2005). For instance, many PPP projects in the United Kingdom and other developed economies are regarded as successful, and the drivers of success have become a subject for investigation (Qiao *et al*., 2001; Jefferies et al., 2002; Li *et al*., 2005). However, less is known about the importance of the critical success factors (CSFs) for successful implementation of PPP projects in developing countries.

The objective of the present paper is to address the aforementioned gap and contribute to the knowledge base of critical success factors for PPP projects in developing countries using Uganda as a base for data collection.

2.0 LITERATURE REVIEW

Akintoye *et al.* (2003) define PPPs as a long-term contractual arrangement between a public sector agency and a private sector concern, whereby resources and risk are shared for the purpose of developing a public facility. The principal aim of a PPP for the public sector is to achieve value for money in the services provided while ensuring that the private sector entities meet their contractual obligations properly and efficiently (Grimsey and Lewis, 2002). PPPs are a means of public sector procurement using private sector finance and best practice. PPPs can involve design, construction, financing, operation and maintenance of public infrastructure and facilities, or the operation of services, to meet public needs. They are often privately financed and operated on the basis of revenues received for the delivery of the facility and/or services. One key to this is the ability of the private sector to provide more favourable long term financing options than may be available to a government entity and to secure the financing in a much quicker time frame (The National Council for Public – Private Partnerships (NCPPP), 2003). Such contracts are long-term in nature and typically 25-30 years. According to Mustafa (1999), PPPs address the common faults that are associated with public sector procurement such as high construction costs, construction overruns, operational inefficiencies, poor design, and community dissatisfaction. The PPP is founded on transfer of risk from the public to the private sector under circumstances where the private sector is best placed to manage risk. One of the key features of the PPP which is appealing to the government is the shift of project risks from the public sector to the consortium involved with the project even though this requires a profit incentive to the project consortium (Grimsey and Lewis, 2002). PPPs are being established as a cost effective method of overcoming costs associated with the provision and maintenance of infrastructure. Duffield (2001) identifies recent Australian examples of PPPs that include the New Prisons Project in Victoria, New South Wales Schools Project and Sydney's Cross City Tunnel.

PPPs have multiple objectives including promoting infrastructure development, developing local economy, reducing costs, increasing construction and operation efficiencies, and improving service quality by incorporating the private sector's knowledge, expertise and capital (Yuan *et al.,* 2009). When PPP projects were first launched in the UK, the government appeared to view them primarily as a way of getting infrastructure costs of the public balance sheet, keeping investment levels up, cutting public spending and avoiding the constraints of public sector borrowing limits (Li *et al.,* 2005). However, Li *et al*. (2005) argue that the impact of government borrowing is much less significant than at first thought and that PPP is now seen as essentially a new approach to risk allocation in public infrastructure projects.. Li (2003) demonstrates that the most significant factors associated with PPP procurement are: a lot of management time spent in the contract transaction, lengthy delays in negotiation and high participation cost. Problems reported with PPP procurement include: high cost of tendering, complex negotiation, cost restraints on innovation, and differing or conflicting objectives among the project stakeholders (Akintoye *et al*., 2001). According to HM Treasury(2000), there are different forms of PPPs the major ones being: asset sales, wider market, sales of business, partnership companies, private finance initiative(PFI), joint ventures, Build Own Operate and Transfer (BOOT), investment partnerships and policy partnerships. The most commonly used PPP model in the UK is the PFI (HM Treasury, 2000). The call for use of PPP in Uganda seems to be based on the PFI model used in the United Kingdom.

A review of literature on the factors critical to the success of project procurement under BOOT, PPP or similar concepts has been carried out. Table 1 provides a summary of the key success factors

Table 1: Summary of Critical Success factors for PPP Projects

No.	Success factor	Source
f1	Favourable legal framework	Tiong (1996)
f2	Stable macro-economic environment including low inflation, stable exchange and interest rates	Qiao *et al.* (2001); Tiong (1996)
f3	Available financial market	Qiao *et al.* (2001)
f4	Technical innovation and technology transfer	Quio *et al.* (2001)
f5	Appropriate risk allocation and risk sharing in doing business	Qiao *et al.* (2001) Grant (1996)
f6	Projects that are socially and environmentally feasible	Qiao *et al.* (2001)
f7	Projects that are technical feasible	Qiao *et al.* (2001) Keong *et al.* (1997)
f8	Condition of existing infrastructure	Keong *et al.* (1997)
f9	Political stability and support	Qiao *et al.* (2001)
f10	Good governance	Quio *et al.* (2001) Keong *et al.* (1997)
f11	Government involvement by providing support	Stonehouse *et al.* (1996)
f12	Well organised local partners/public agencies	Salzmann and Mohamed, (1999)
f13	Shared authority between public and private sectors	Kanter (1999); Stonehouse *et al.* (1996)
f14	Transparency and competition in procurement	Jefferies *et al.* (2002)
f15	Commitment/responsibility of public-private sectors	Hardcastle *at al.* (2006)
f16	Strong private consortium	Jefferies *et al.*, (2002); Hardcastle *et al.*, (2006)
f17	Social support and developed culture of partnership	Duffield (2005)

Rockart (1982) defines CSFs as: 'those few areas of activity in which favourable results are absolutely necessary for a manager to reach his/her goals'. The CSF methodology is a procedure that attempts to make explicit the key areas that are essential for the management success. The concept of "Critical success factors" (CSF) was developed by Rockart and the Sloan School of Management with the phrase first used in the context of information systems and project management (Rockart 1982). Critical success factors are those fundamental issues inherent in the project, which must be maintained in order for team working to take place in an efficient and effective manner. They require day-to-day attention and operate throughout the life of the project.

3.0 METHODS

3.1 Questionnaire Design

The research investigated the critical success factors for PPP in construction projects in Uganda's public sector. This being one of the first studies, the investigation was carried out on the contractors because they are key in this type of procurement and they could easily be identified. Critical success factors were compiled basing on a review of the literature as in Figure 1. Discussions with contractors, government ministry officials, consultants working on public projects and on personal experience with public construction projects were used to verify that indeed the indicated factors were important in addressing issues of PPP in building projects and they were written out. The research was conducted using a questionnaire survey that was mainly quantitative. The questionnaire was complied basing on the refined list of causes after a pilot study. The piloting was to improve the wording and increase the reliability of the questions. The questions were of closed type because it is easier and faster to analyse the information collected (Fellows and Liu, 2003). The respondents were requested to give their opinion on the "Availability of the factor" and "Ease of improving the factor" of each of

the seventeen (17) factors using a 5 - point Likert scale (Fellows and Liu, 2003). This type of scale has been found to be acceptable in other construction management research. For example, Wang *et al.* (1999) used similar approach to investigate risk criticality in China's BOT projects.

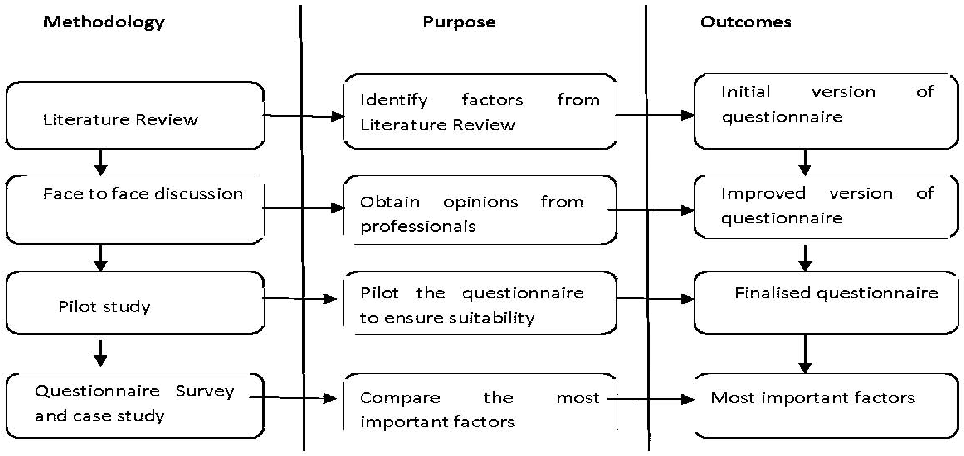

Figure 1: Summary of Methodology and Outcomes

3.2 Surveys

The surveys well carried out with structured questionnaires. Closed ended questions were used as they are very convenient for collecting factual data and are simple to analyse since the range of potential answers is limited (Fellows and Liu, 2003). Closed questions were mainly used for this research after considering the results of the pilot studies.

Field assistants were at hand to follow up the responses and also to explain terms in the questionnaire just in case the responded wanted clarification. The respondents were requested to rank the 17 factors with regard to their availability and ease of improvement. The survey gathered data from chief executives of the largest building contractors who are registered with the contractor's association, Uganda National Association of Building and Civil Engineering Contractors (UNABCEC). The selection of the biggest contractors was based on the assumption that large and wellestablished firms are more capable of getting involved in PPP projects. It was decided that all those in category A and B be the source of potential participants. At the national level, one recognized way of categorizing construction companies is by the UNABCEC class. The classification from A to E takes into account the financial strength, size and ability to carry out contracts. Those in class A are the biggest and undertake works of the biggest magnitude and include some multinational companies. Owing to the relatively small number of firms within these two categories A and B, all the 88 civil and building contractors in the two categories were targeted.

3.3 Sample Profile

Of the 88 contractors targeted, only 66 responded giving a response rate of 75 percent. The average duration of stay of the firms in the construction market averages 13 and the minimum and maximum durations are 6 and 40 years respectively. This implies that all the firms have some experience in the building industry. The average number of permanent workers was 31 and the minimum and maximum numbers were 4 and 150 respectively. The average number of temporary workers at the time of the survey was 219 while the minimum was 104 and maximum 1500. This implies that most of the firms are established and have acceptable numbers of manpower and carry out relatively big jobs.

3.4 Data Analysis

The analysis of the data was carried out with the help of Statistical Package for Social Scientists (SPSS) 10.0 package and Microsoft Excel. The data collected from the survey were coded and entered into the software that calculated all the required statistics such as mean, variance, and Coefficient of Variation. Statistical analysis was undertaken using Cronbach's alpha to test the reliability. The Cronbach alpha reliability for the factors is 0.767 suggesting that the data collected for the critical success factor analysis are reliable (Norusis, 1992).Their evaluations were then converted into expected values, variances, and coefficients of variation as shown in equations 1, 2 and 3 respectively.

$$E(x) = \sum_{x=1}^{n} x_i p(x_i) \quad (1)$$

$$V(x) = E(x-\mu)^2 \quad (2)$$

$$COV(x) = \frac{\sqrt{V(x)}}{E(x)} \quad (3)$$

Where E(x) is the expected value of a discrete random variable X; x the values of the random variable for which p(x)>0; p(x) is the probability distribution; μ is the average; V(x) is the variance of a random variable X; and COV(x) is the coefficient of variation. The success factors were ranked using their respective COV. The use of COV in ranking has been done before and is considered more reliable because it considers both E(x) and V(x) (Al-Shumaimeri, 2001). Table 2 ranks the factors by the availability against the ease of improving the factor. Factors with the same COV are given the same rank and subsequent ranks are adjusted to reflect the number of factors having the same rank.

4.0 CONCLUSION AND RECOMMENDATIONS

To the contractors and financial institutions operating in Uganda and to the Government of Uganda, this study presents the availability of factors and the ease of improving those factors. This study can be useful to the stakeholders in different ways. First by identifying and evaluating the factors affecting PPP projects, stakeholders intending to carry out PPP projects can focus their attention and optimize the resources on the real issues. Lack of projects that are technically, economically and socially viable are the most critical factors to address. Second, by assessing the ease of improvement of the factors, firms can tackle the easiest first. Moreover, the study sets the foundation for further analysis of the factors even with other stakeholders like the government and financial institutions. This will enable those intending to carry out PPP projects in developing countries to get more insights and better chances of carrying of PPP projects successfully. In that way, the construction industry in developing countries will improve their performance. It is also recommended that similar studies be carried out on the other stakeholders including potential clients, financiers, and government.

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Table 2: Availability against Ease of Improvement of Success Factor

		Availability of Success factor				Ease of Improvement of success factor			
		Mean	**SD**	**COV**	**Rank**	**Mean**	**SD**	**COV**	**Rank**
f1.1	Favourable legal framework	2.785	1.218	.437	2	3.308	1.185	.358	4
f1.2	Stable macro-economic environment including low inflation, stable exchange and interest rates	2.954	.943	.319	12	3.123	1.193	.382	1
f1.3	Available financial market	3.231	.932	.288	15	3.292	1.221	.371	2
f1.4	Technical innovation and technology transfer	3.215	1.053	.328	10	3.492	.970	.278	14
f1.5	Appropriate risk allocation and risk sharing in doing business	2.538	.969	.382	6	3.031	1.104	.364	3
f1.6	Projects that are socially and environmentally feasible	3.585	1.044	.291	14	3.862	.966	.250	16
f1.7	Projects that are technical feasible	3.754	1.016	.271	17	3.938	.998	.253	17
f1.8	Condition of existing infrastructure	3.031	1.060	.350	8	3.569	.935	.262	15
f1.9	Political stability and support	3.292	.964	.293	13	3.492	1.187	.340	7
f1.10	Good governance	3.369	.945	.280	16	3.738	1.203	.322	9
f1.11	Government involvement by providing support	2.723	1.153	.423	3	3.415	1.211	.354	5
f1.12	Well organised local partners/public agencies	2.862	.966	.338	9	3.431	1.089	.318	10
f1.13	Shared authority between public and private sectors	2.708	1.100	.406	4	3.369	1.039	.308	11
f1.14	Transparency and competition in procurement	3.185	1.223	.384	5	3.631	1.269	.350	6
f1.15	Commitment/responsibility of public-private sectors	3.077	1.005	.327	11	3.554	1.016	.286	12
f1.16	Strong private consortium	2.569	1.199	.467	1	3.308	.934	.282	13
f1.17	Social support and developed culture of partnership	2.908	1.071	.368	7	3.431	1.131	.330	8

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An Investigation into the Causes of Delay and Cost Overrun in Uganda's Public Sector Construction Projects

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ABSTRACT
There is great concern for delays and cost overruns as most of the public construction projects are implemented using tax payers' money. At the national and international levels, there is a lot of debate on how to minimise project delays and cost overruns. The main objective of this study was to investigate the causes of construction project delays and cost overruns in Uganda's public sector. Specifically, the study was intended to identify the causes and rank them according to their frequency, severity and importance. The Civil Aviation Authority (CAA) was taken as a case study as a means of validating the results from the survey. Frequency index, severity index and importance index were computed and the factors were ranked for all the twenty factors. The five most important causes of delays in construction projects were found to be: change of work scope; delayed payments; poor monitoring and control; high cost of capital; political instability/insecurity. The relationship between the factors that cause delays and those that cause cost overrun was found to be moderate. Recommendations were made for improved project management; change from the traditional contract type to the design-build type; and improved cash flow on the part of the client so as to reduce payment delays. The results of this research should help construction practitioners, policy makers and researchers in the field of construction management in managing overruns.

Keywords: Construction, cost overrun, public projects, time overrun

1.0 INTRODUCTION

The inability to complete projects on time and within budget continues to be a chronic problem worldwide and is worsening (Ahmed *et al*., 2002). Azhar and Farouqui (2008) observe that the trend of cost overrun is common worldwide and that it is more severe in developing countries. The debate in the construction industry on how to minimise or eliminate delays and cost overruns has been on for some time among professionals, clients and/or end users, and the policy makers. The funding for construction industry activities is, in many countries, used to regulate the economy. As the construction industry continues to grow in size, so do planning and budgeting problems. This is because it is common for projects not to be completed on time and within the initial project budget. There are quite a number of examples at the national and internal scene. For instance, most of the construction projects in Uganda have had problems with delay in completion and cost overruns and this has caused a lot of concern. A local example is the Northern by-pass in Kampala which was to take two and a half years instead took more than 5 years and the cost had similarly gone up by more than 100 percent (Ssepuuya, 2008). Because of construction delays and cost overruns, less and less work is performed despite the increase in construction budgets. The aim of the research was to investigate the causes of delays and cost overruns on construction projects in Uganda's public sector. Specifically, the research aimed at identifying and ranking the causes of delays and cost overruns on construction projects in