
**RISK ALLOCATION PREFERENCE IN PUBLIC-PRIVATE PARTNERSHIP
INFRASTRUCTURE PROJECTS IN NIGERIA**

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ABSTRACT

The traditional methods used to measure project success in the construction industry are 'the iron triangle' of time, cost and quality. These criteria are no longer sufficient as other factors related to project sustainability are being demanded. Sustainable procurement policies require that projects provide social and economic gains to host communities. Construction works procured using public private partnership arrangement (PPPs) are more risk prone than those procured using other forms, primarily due to the lengthy concession period and the multi-parties involved in the arrangement. In Nigeria, researches on the assessment of the performance of projects procured using PPP are few due to the novelty of the approach. Many projects are still at pre-construction and construction stages whilst few are at the operation stage. It is important for the public and private sectors to establish effective risk allocation strategies for public-private partnership (PPP) projects in order to achieve a more efficient process of contract negotiation and reduce the occurrence of dispute during the concession period. This paper aims to identify the preferred risk allocation in PPP projects in Nigeria. A questionnaire survey was used based on identified risks. The results show that the public sector preferred to retain most political, legal and social risks, and share most micro level risks and force majeure risk; while the majority of micro level risks were preferred to be allocated to the private sector. The analyses of risk allocation preference among the respondents indicate that the public sector was most able to transfer the PPP risks to the private sector. 55% of the respondents exhibited the greatest degree of support for the public sector to retain the macro level risks. All respondents agreed that private investors should take a more active role in managing the micro level risks. 30% of the respondents considered that majority of the micro level risks should be shared equally between the public and private sectors, while 15% of the respondents indicated that the private sector should take a more active role in managing the micro level risks. The study provides investors a better understanding of risk preferences among the stakeholders so that they could adjust their strategies according to the specific situation and achieve better value for money in running their PPP projects.

Keywords: *Risk allocation; Risk management; Public-private partnership (PPP); Nigeria*

INTRODUCTION

A public-private partnership (PPP) is defined by the National Council for Public-Private Partnerships, USA (2009) as "a contractual agreement between public agencies (federal, state, or local) and a private sector entity." through which the skills and assets of each sector are shared in delivering a service or facility for the use of the general public. It has been recognized as an effective way of delivering value for money for public infrastructure and

services, which seeks to combine the advantages of competitive tendering and flexible negotiation, and to allocate risk on an agreed basis between the public sector and the private sector (Li et al. 2005). However, it is worth highlighting that PPP is not a panacea or a quick fix solution to deliver project financing and realization (European Commission 2003). It is essential for the public client and the private bidders to evaluate all of the potential risks throughout the whole project life. Risk is inherent and difficult to deal with, and requires a proper management framework both theoretically and practically. This is more so the PPP implementation, due to the huge project scale, long concession period, complexity and social sensitivity usually associated with PPP projects (Grimsey and Lewis 2002). Public and private sector bodies must place particular attention on the procurement process while negotiating contracts for PPP to ensure a fair risk allocation between them. In preparing for a PPP project, government would state its preferred allocation of project risks; private investors would assess their capability of taking these risks, and then propose a bidding price. The contract negotiation would naturally focus on the risk sharing scheme. There are many techniques to identify a risk sharing scheme, among others, questionnaire survey is one of the most commonly adopted techniques, as evidenced in studies by Li et al. (2005); Rouboutsos and Anagnostopoulos (2008), and Jin and Doloi (2008). The same technique was therefore also adopted in this paper. Recently, research on the risk allocation in PPP projects was observed in the publications by Abednego and Ogunlana (2006); Medda (2007); Loosemore (2007), and Lain et al. (2007). These previous studies indicate that equitable risk allocation is highly related to the social, economic and legal situation of the countries under study. The research objective of this paper is to develop a risk allocation scheme for PPP projects in Nigeria. Another objective of this paper is to establish the risk allocation preferences among the stakeholders in Nigeria in order to identify the influencing reasons for allocating a risk, which may provide references to both researchers and practitioners.

BACKGROUND

It has been reported in several studies that the construction industry performance in Nigeria is poor as the industry is characterized by repeated delays, cost overruns and incessant building collapse. The poor performance of the industry has attracted the attention of both public and private sector clients. This is of great concern because the industry can no longer cope with the high demand put on it as a result of increased population and shortage of fund to finance much needed infrastructural facilities. Consequently, successive governments are challenged by the need to provide new infrastructure and also to maintain the existing ones as the majority of the facilities are in a state of disrepair. In trying to ameliorate the infrastructure deficit problem, which has greatly constrained the economic growth and development of the country, the present democratic government in Nigeria has envisioned a 'Seven- Point Agenda' aimed at improving the quality of life of the people. At the centre of this agenda is the provision of infrastructure which requires massive investment that is beyond the means available to the government. The Nigerian government therefore sought to partner with the private sector through Public Private Partnership (PPP) arrangements. This led to the inauguration of the board of the Infrastructure Concession Regulatory Commission (ICRC) by late President Umaru Musa Yar'Adua in 2008. The commission is to serve as a major vehicle in operationalizing the

process of private sector participation in infrastructure finance in Nigeria. The Commission is expected to epitomize best practices in Public Private Partnership (PPP), and be a beacon for sub-national entities to take their bearings from (Nigeriafirst, 2009).

LITERATURE REVIEW

Construction Industry and National Development

In Nigeria, in the 1980s the construction industry alone contributed up to 7% to the Gross Domestic Product (GDP) (NBS, 2008). This significant contribution of the industry to the GDP corroborates the assertion by Walsh and Sawhney (2002) that construction activity is an important contributor to GDP in most industrialized countries and contributes significantly to global economic growth. Although Nigeria has not yet attain the status of an industrialized country the country is aspiring to get there soon. The contribution of the construction sector in industrialized countries like the United State of America (USA) and Australia were, in 1996, around 10.7% (Walsh and Sawhney, 2002) and 6.3% respectively (Croese et al. 1991). It is evident, therefore, that the industry plays a prominent and significant role in national development. However, by 2002 construction contribution to GDP in Nigeria had been eroded to a mere 1% of the GDP (AFO/OECD, 2004). This has been attributed to high fragmentation of the industry, political instability, poor performance combined with low productivity over the years (Okuwoga, 1998; Adeyemi et al., 2005 cited in Oladapo, 2007). The Nigerian construction industry in the past two or three decades has largely been supported by substantial public spending to fund the construction of basic infrastructure; as evident in the yearly budgetary allocation to capital expenditure. The situation has been changing given the Federal Government's budgetary constraints vis-à-vis the quantum of resources required to rebuild, maintain, upgrade, and expand the country's critical infrastructure. In trying to ameliorate the infrastructure deficit problem, which has greatly constrained the economic growth and development of the country, the present democratic government in Nigeria has envisioned a 'Seven- Point Agenda' aimed at improving the quality of life of the people. At the centre of this agenda is the provision of infrastructure which requires massive investment that is beyond the means available to the government.

Public Private Partnership Projects (PPP) and Performance Measurement

PPP has been popularly used worldwide, but the extant literature suggests that the UK first found success in the form of the Private Finance Initiative (PFI) (Cheung et al., 2010). Raisebeck and Xu (2010) also opine that the UK pioneered the development of the PPP procurement framework and as a result there has now developed a large body of literature on the approach. This arrangement is new phase in the construction industry in Nigeria. The first celebrated Build-Operate-Transfer (BOT) project in Nigeria at the federal level was the construction of Murtala Mohammed Local Airport in 2000. Since then many State governments as well as Local government within the country has been adopting this method in the procurement of social and economic infrastructure in their respective localities. Today, with the official inauguration of ICRC board and the establishment of Public Procurement Act in 2005 and 2007 respectively, the coast is now free for more partnerships between the public and the private sectors. Apart from the obvious financial advantages of adopting PPPs, other

attractive factors have been identified by researchers. The following advantages are of particular relevance to this study: (1) risk sharing or outright risk transfer to the party that can best manage them in PPP, (2) cost saving as a result of the private sector's innovation and efficiency, (3) Value for money, (4) cost certainty, (5) Time certainty, (6) PPP frees up fiscal funds for other areas of public service and improve cash flow management and last, but not the least, is the issue of (7) business opportunities (British Columbia, 1999; Li, 2003; Akintoye et al. 2003; Grimsey and Lewis, 2004; United Nations Economic Commission for Europe, 2004; Li et al. 2005a; Chan et al., 2006; So et al., 2007 and Loosemore, 2007). In the UK and Australia where PPP has been used extensively, research has been conducted to provide explanation for the increase in the popularity of PPP by the government, the level of application as well as the type of model used. Others have also worked on the criteria that favour successful PPP adoption on projects. Unfortunately, the existing literature has not addressed the performance or the satisfaction of the stakeholders to PPP projects in the region. Therefore there is need to assess the success and sustainability of the concept. Since the agenda of sustainability is growing rapidly, the construction industry as the prime mover of the economy needs to take a bigger step towards addressing sustainability in its performance. According to Yuan et al., (2009) PPP performance objective should reflect the public client's overall strategic plan and mission objectives, private sector's long-term development and payoff strategy, and the general public's requirements of quality public facilities and services. The implication then is that all the aforementioned objectives or specification of the requirements from each stakeholder's perspective is the first principle in the performance management system. Thus, the key to successful implementation of a PPP project is the feasibility of the project in relation to the economy, environment, society, politics, legislation and financing. All these feasibility and viability criteria will help to ensure that the best value can be achieved in those given conditions (Salman et al. 2007).

Research Methodology

Data Collection

To elicit useful data, an empirical questionnaire survey was undertaken in Nigeria. The questionnaire of Li et al. (2005) was adopted for the study as it included most risks identified from the literature and survey. By adopting the questionnaire of Li et al. (2005), a three-level classification was used, whereby risks were considered in terms of the nature of their relationship to projects. Macro level risks have their origins beyond the system boundaries of projects; meso level risks are concerned with factors directly concerned with the nature of each project; while micro level risk factors are associated with the relationships between the parties involved within projects (Li et al. 2005). In this study, the target survey respondents of the questionnaire included all construction industry practitioners from the public, private, and other sectors as well as academic researchers. Target respondents were those with direct hands-on involvement in PPP projects or those with rich research experience in the field of PPP. Survey questionnaires were sent to 103 target respondents in Nigeria. These respondents were requested to allocate the prescribed risk to either the private or the public sector, or describe it as "shared" between the public and private sectors.

Survey Description

A total of 95 completed questionnaires were returned representing response rates of 92.2%. This is higher than that achieved by Li et al. (2005). Such response rates are not uncommon in project and construction management research, the sample size is close to Li et al. (2005). As shown in Fig. 1, the respondents represented a balanced role in their PPP projects and had a diversified exposure to different types of PPP projects.

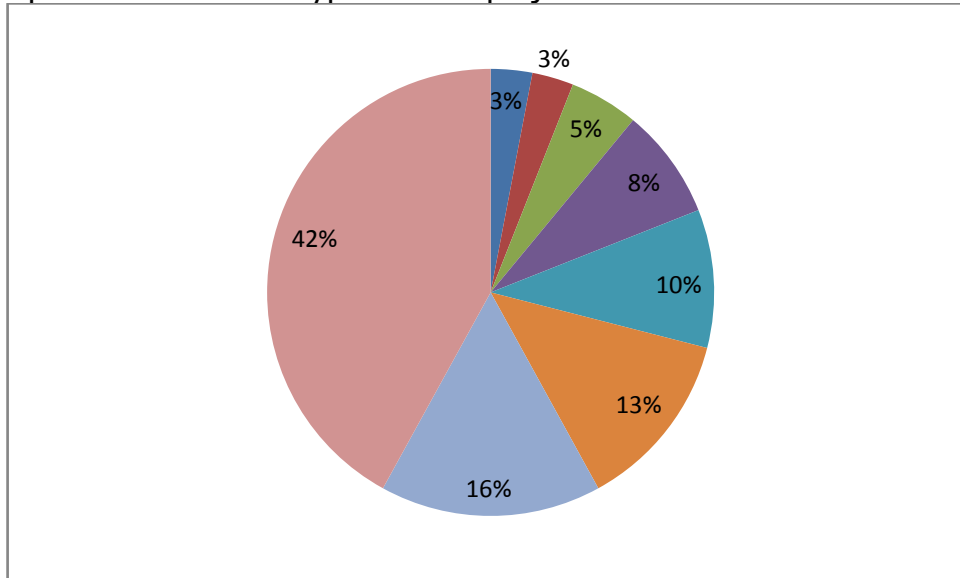


Fig. 1. Survey of respondents' of PPP projects

Out of the 95 respondents, 60% were from the industry and 40% from academic organizations, as presented in Table 1. From the presentation in Tables 1, 29 respondents did not have hands-on experience in PPP projects. This situation would limit the generalization of the findings of the study. Nevertheless, a large part of these respondents were academic researchers who are knowledgeable about PPP. The survey results are therefore still meaningful.

Presentation of Survey Results

Three risk allocation categories are defined as follows:

1. Risks that should be allocated to the public sector:
2. Risks that should be shared by both parties: and
3. Risks that should be allocated to the private sector.

In line with the earlier analyses conducted by Li et al. (2005), the principle of analysis is based on the level of majority opinion (>50%). In other words, if over 50% of the respondents are in favour of allocating a particular risk factor to the private sector, then the risk preference is considered to be allocated to the private sector, If none of the frequencies is over 50%, the risk factor is regarded as having no prevailing preference and therefore the risk allocation would have to be negotiated.

Table 1. Information of survey respondents

| Role | Working experience (years) | | | | | PPP experience (project number) | | | | |
|----------------------------|-------------------------------|-----------|-----------|----------|----------|------------------------------------|----------|----------|----------|----------|
| | <5 | 6-10 | 11-15 | 16-20 | >20 | 0 | 1 | 2 | 3 | >3 |
| Industrial Organization | 15 | 10 | 7 | 4 | 4 | 10 | 4 | 5 | 2 | 3 |
| Academic Organization | 15 | 5 | 5 | 3 | 3 | 12 | 1 | 3 | 1 | 2 |
| Total | 30 | 15 | 12 | 7 | 7 | 22 | 5 | 8 | 3 | 5 |

Preferred Risk Allocation in Nigeria

The survey feedback concerning the preferred risk allocation of Nigeria’s PPP projects is presented in Table 2.

Risks to Be Allocated to the Public Sector

Seven risks to be allocated to the public sector as depicted in Table 2 are: all political (four), level of public opposition to project, and risk concerning legislation change. Additionally, “delay in project approvals and permits” risk was preferred to be assigned to the public sector with an obvious reason that the government is responsible for this task. Six of the seven risks in this category belong to the macro level.

Risks to Be Allocated to the Private Sector

Table 2 indicates that 22 out of 46 risks were preferred to be assigned to the private partner. Among those, “industrial regulation change,” “environment,” “interest rate volatility,” “geotechnical conditions,” and “weather” fall within the micro level group. Only one micro level risk “staff crises” was preferred to be primarily allocated to the private sector. It could be observed that the majority of the mesolevel risks were preferred to be allocated to the private sector. There were 16 out of 21 major risks included in this category.

Risks to Be Shared

Eleven risks were preferred to be shared between the public and private sectors, seven out of them belong to micro level, including all relationship (six) risks and one third party risk. The remaining sharing risks include “force majeure.” “Excessive contract variation.” “Poor financial market and influential economic events.” All these risks have the same characteristic that both public and private sectors may not be able to deal with it solely. Hence, a shared mechanism would appear to be the best option.

Table 2. Preferred Risk Allocation in Nigeria’s PPP projects

| Risk factor | Group | Subgroup | Public (%) | Private (%) | Shared (%) | Preferred allocation |
|--|-------|-------------------|------------|-------------|------------|----------------------|
| Expropriation of assets | Macro | Political | 60 | 19 | 21 | To the public sector |
| Unstable government | Macro | Political | 59 | 20 | 21 | |
| Delay in project approvals and permits | Macro | Design | 55 | 23 | 22 | |
| Poor public decision-making process | Macro | Political | 59 | 15 | 26 | |
| Legislation change | Macro | Legal | 56 | 22 | 22 | |
| Strong political opposition/hostility | Macro | Political | 53 | 15 | 32 | |
| Level of public opposition to project | Macro | Social | 52 | 31 | 17 | |
| Lack of tradition of private provision of public services | Macro | Social | 35 | 30 | 35 | Without prevailing |
| Change in tax regulation | Macro | Legal | 35 | 35 | 30 | Preference |
| Land acquisition (site availability) | Meso | Project selection | 39 | 24 | 37 | |
| Late design changes | Meso | Construction | 12 | 49 | 39 | |
| Level of demand for project | Meso | Project selection | 6 | 47 | 47 | |
| Inflation rate volatility | Macro | Macroeconomic | 12 | 40 | 48 | |
| Force majeure | Macro | Natural | 6 | 15 | 79 | Shared |
| Excessive contract variation | Meso | Construction | 6 | 19 | 75 | |
| Differences in working method and know-how between partners. | Micro | Relationship | 11 | 16 | 73 | |

Table 2. Preferred Risk Allocation in Nigeria’s PPP projects (continued)

| Risk factor | Group | Subgroup | Public (%) | Private (%) | Shared (%) | Preferred allocation |
|--|-------|--------------|------------|-------------|------------|----------------------|
| Inadequate distribution of responsibilities and risk | Micro | Relationship | 17 | 11 | 72 | |
| Inadequate distribution | Micro | Relationship | 13 | 16 | 71 | |

| | | | | | | | |
|--|-------|-----------------|----|----|----|-----------------------|--|
| of authority in partnership | | | | | | | |
| Lack of commitment from either partner | Micro | Relationship | 27 | 9 | 64 | | |
| Third party tort liability | Micro | Third party | 15 | 22 | 63 | Shared | |
| Inadequate experiences in PPP/PFI | Micro | Relationship | 17 | 23 | 60 | | |
| Poor financial market | Macro | Macroeconomic | 14 | 14 | 72 | | |
| Influential economic events | Macro | Macroeconomic | 10 | 31 | 59 | | |
| Organization and coordination risk | Micro | Relationship | 8 | 42 | 50 | | |
| Residual risk | Meso | Residual risk | 7 | 50 | 43 | To the private sector | |
| Industrial regulation change | Macro | Legal | 11 | 52 | 37 | | |
| Environment | Macro | Natural | 4 | 54 | 42 | | |
| Interest rate volatility | Macro | Macroeconomic | 12 | 55 | 33 | | |
| Operational revenue below expectation | Meso | Operation | 10 | 59 | 31 | | |
| High finance cost | Meso | Project finance | 9 | 62 | 29 | | |
| Geotechnical conditions | Macro | Natural | 4 | 62 | 34 | | |
| Staff crises | Micro | Third party | 14 | 72 | 14 | | |
| Availability of finance | Meso | Project finance | 2 | 64 | 34 | | |
| Financial attraction of project to investors | Meso | Project finance | 11 | 66 | 23 | | |

Table 2. Preferred Risk Allocation in Nigeria's PPP projects (continued)

| Risk factor | Group | Subgroup | Public (%) | Private (%) | Share d (%) | Preferred allocation |
|--|-------|--------------|------------|-------------|-------------|-----------------------|
| Weather | Macro | Natural | 0 | 67 | 33 | |
| Operation cost overrun | Meso | Operation | 12 | 69 | 19 | |
| Low operating productivity | Meso | Operation | 13 | 70 | 17 | |
| Maintenance costs higher than expected | Meso | Operation | 12 | 70 | 18 | |
| Insolvency/default of subcontractors/suppliers | Meso | Construction | 14 | 72 | 14 | |
| Design deficiency | Meso | Design | 8 | 70 | 22 | |
| Maintenance more frequent than expected | Meso | Operation | 15 | 72 | 13 | To the private sector |

| | | | | | |
|---------------------------------|------|--------------|----|----|----|
| Construction cost overrun | Meso | Construction | 0 | 75 | 25 |
| Unproven engineering techniques | Meso | Design | 13 | 79 | 8 |
| Poor quality of workmanship | Meso | Construction | 2 | 79 | 19 |
| Labour/material availability | Meso | Construction | 13 | 79 | 8 |
| Construction time delay | Meso | Construction | 0 | 86 | 14 |

Risks without Prevailing Preference

Finally, six risks could not be grouped in any of the above categories, including “lack of tradition of private provision of public services,” “change in tax regulation.” “land acquisition (site availability),” “late design changes,” “level of demand project” and “inflation rate volatility.” The public and private sectors therefore would need to consider the allocations carefully with regard to these risks. “availability of finance.” and “labour material availability” were prepared to be allocated primarily to the private sectors, but with perceived opportunities for sharing with the public sector.

Risks to Be Shared

Five risks under the category of macro level (three natural, one social and one macroeconomics) risks and two mesolevel risks (excessive contract variation and “residual risk”) were considered by the majority of respondents to be shared by the public and private sectors. There are also another six microlevel risks in this shared risk category option, including live relations up risks, and one third-party risk.

Risks without Prevailing Preference

Finally, there were five risks which could not be included in any category. These risks are: delay in project approvals and permits, late design changes, industrial regulation change, “third party tort liability,” and influential economic events.

CONCLUSIONS

Li et al. (2005) conducted an impressive analysis of preferred risk allocation in PPP projects in the U.K. their work inspired the writers to carry out a similar research to identify the preferred risk allocation for PPP projects in Nigeria. A survey questionnaire originally developed by Li et al. (2005) was used to canvass the options of practitioners with experience in PPP projects. The results show that the public sector partner preferred to retain political and social risks as well as the risks of legislation change and delay in project approvals and permits in Nigeria. Risks such as third party tort liability, force majeure, excessive contract variation, poor financial market, and influential economic events were preferred to be shared by both parties. The majority of the remaining PPP’ risks, especially those at the major risk level were preferred to be allocated to the private sector. The findings reported in this paper would shed sonic insights into PPP risks and their preferred allocation

between the public and private sectors in general. In particular, this study would provide international investors a better understanding of risk preferences in Nigeria so that they could adjust their strategies according to the specific situation and achieve better value for money in timing their PPP projects.

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