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Research Article

Risk Management in Public Private Partnership Building Construction Projects

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Abstract

The study examines risk management in Public Private Partnership (PPP) projects carried out in the federal capital city of Nigeria. A questionnaire survey approached was adopted in acquiring the data required for the analysis. A total of 155 copies of questionnaire were administered. The analysis shows that the public sector preferred to retain most political, legal and project selection risks, while the private sector preferred to retain most construction risk and operation risk. It was also established that both parties preferred to share the economic risks and market risks. The findings indicate that PPP is a good approach in building construction projects. Also, the findings show that adequate allocation of risk is necessary for the smooth implementation of any PPP model. The paper provides investors a better understanding of risk preferences among the stakeholders in the Nigerian construction industry so that they could better adjust and plan their strategies according to the specific risk factors and achieve better value for money when executing PPP projects.

1. Introduction

Several infrastructures and building construction projects have been implemented by the Nigerian Government and its different agencies using Public Private Partnership (PPP) approach. For example, the domestic terminal of Murtala Muhammed International Airport, Lagos, which was partially destroyed by fire in 2000, was re-built through a syndicated medium-term refinancing facility from a consortium of six Nigerian banks. The banks that were involved are Zenith Bank Plc, Oceanic Bank Plc, Guaranty Trust Bank Limited, Access Bank Limited and First City Monument Bank. In recognition of the potential role for PPP in infrastructure development in Nigeria, the government in 2008 established the Infrastructure Concession Regulatory Commission (ICRC) to develop and lead on the development of a harmonised PPP policy in the

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country (Akinyemi et al., 2009). Several other projects at the federal and state government have benefited from the scheme.

The World Bank (2009) gave a generally accepted definition of partnership as "a collaborative relationship between entities to work together towards shared objectives through mutually agreed division of labour". Though, this definition is not a precise one since it does not specifically mention several other important areas of partnership such as shared responsibility, joint investment of resources, shared risk taking and mutual benefits (Demirjan, 2008), however, it has really helped in clarifying that partnerships is different from other relationships. For this reason, several researchers had to further highlight additional aspects of partnering. For example, Demirjan (2008) appears to provide an alternative definition based on the perspective of shared objectives. This is especially true as risk-sharing among governments, utility, lenders and developers is often at the heart of most reservations or debate about Public-Private Partnership projects (Malhotra, 1997; Akintoye et al., 2003). Literature indicate that there is no single accepted definition of risk (Rockett, 1999), resulting in the fact that risk is a generally misunderstood concept having been used interchangeably with other related terms such as harm, hazard, threat, and uncertainty Khattab et al., (2007). The concept of risk has been studied intensively by researchers across all known schools of thought leading to a focus on three key areas, namely: risk assessment, risk management and risk perceptions. It is particularly important to highlight the fact that risk perception generates considerable interest in cognitive and behavioural psychology (Keil et al., 2000). The reality is that major infrastructure projects, because of their complexity (Pipattanapiwong et al., 2003), are highly risky. To understand the impact of these risks, it is necessary to conduct an exploration of the various independent parameters that impact on decision-making (Grimsey and Lewis, 2004). The adoption of PPPs by governments around the world is a recent phenomenon and it is important that good practice is maintained among the parties involved (Reeves and Ryan, 2007). Consequently, the objectives of this paper are to examine the effectiveness of PPP models on building construction projects, determine preferred risk allocation in public private partnership projects, and measure the effects of public private partnership building project execution.

2. Methodology

The Federal Capital Territory of Nigeria, Abuja was used as the study area due to its peculiar status, state of act construction process and product adopted therein, to provide for the need of the ever-increasing

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population in Abuja. The rapid growth in the Nigeria construction industry as well as the application of more PPP projects is not an exception. Also, several PPP projects are on-going and some completed.

Data were collected from both primary and secondary sources for analysis. The primary data include reconnaissance survey and structured questionnaire obtained from selected professionals in Abuja representing the Nigeria construction industry. A total number of 155 copies of questionnaire were administered. The sampling method adopted is the simple random sampling in order to eliminate the incidence of bias. Secondary data were obtained from extensive literature review of relevant seminar paper, reports, textbook, and journals both published and unpublished.

The respondents were categorized by education background, years of experience, and profession. Also, project cost was utilized as a variable. In the education background category, 49% of the respondents have BSc/HND qualification, 13% are PGD Holders, 26% are MSc holders, while the remaining 12% have PhD. In the years of experience category, 40% of the respondents have 5-10 years' experience, while 60% of the respondents have above 10 years' experience. From the survey, it was revealed that 20% of the projects the respondents are engaged in worth 5-10 million, 28% of projects worth 30-50 million, while the projects above 50 million are 52%. Table 1 shows the profession distribution of the respondents. Out of a total of 155 respondents, 19.36% are Architects, 23.23% are Builders, 9.03% are Civil Engineers, and 22.58% are Estate Managers, while Quantity surveyors are 25.80%. Most of the respondents are Quantity surveyors.

Table 1: Profession Distribution of Respondent

Profession of respondent	No Administered to respondents	Percentage (%)
Architect	30	19.36
Builder	36	23.23
Civil engineer	14	9.03
Estate Surveyor	35	22.58
Quantity Surveyor	40	25.80
Total	155	100.00

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3. Results and Discussion

3.1. Effectiveness of PPP models

The result of the effectiveness of supply and management contracts as a form of PPP model is shown in Figure 1. The result shows that 22% of the respondents were of the opinion that it's averagely effective for project delivery. Also, the result of the effectiveness of turnkey contracts as a form of PPP model is presented in Figure 2. The result indicates that 70% of the respondents were of the opinion that it's averagely effective for project delivery, while 30% were not sure.

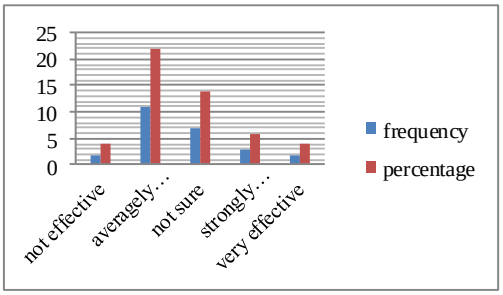


Figure 1: Supply and management contracts PPP model

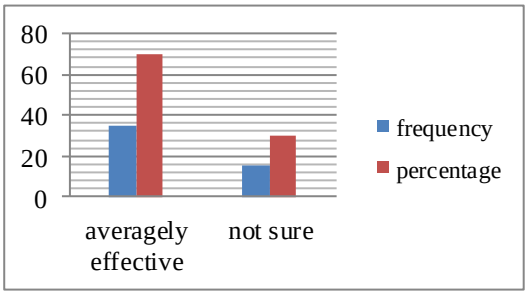
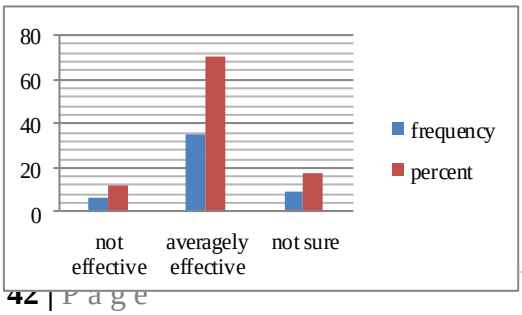


Figure 2: Turnkey contract PPP model

Figure 3 shows the effectiveness of lease/affermage contracts as a form of PPP model. From the survey, 70% of the respondents were of the opinion that it's averagely effective for project delivery, 12% went for not effective, while 18% were not sure. In addition, the effectiveness of concession contracts as a form of PPP model is shown in Figure 4. From the survey, it was established that 62% of the respondents are of the view that it's very effective for project delivery, while 38% believe it's strongly effective.



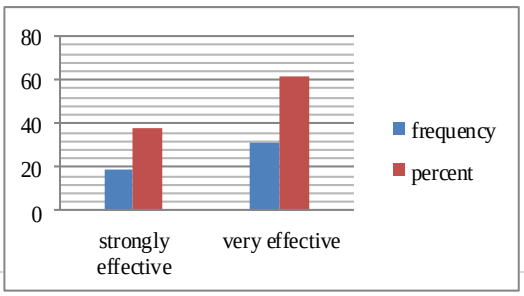


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Figure 3: Lease/Affermage Figure 4: Concession contracts

Table 2 shows the effectiveness of private ownership of assets contracts as a form of PPP model. From the survey, 62% of the respondents were of the view that it's averagely effective for project delivery, 8% of the respondents believe it is not effective, while 30% said they were not sure.

Table 2: Private ownership of assets contract

	Frequency	Percent (%)
Not effective	4	8
Averagely effective	31	62
Not sure	15	30

3.2 Preferred Risk Allocation

Table 3 illustrates respondents view on how political risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 62% of the respondents are of the opinion that political risk should be the responsibility of the public sector, 10% delegated it to the private sector, while 28% believe it should be shared among both parties. Table 4 illustrates respondents view on how construction risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 62% of the respondents were of the opinion that construction risk is the responsibility of the private sector, 8% said it should be delegated to the public sector while 30% believe this risk should be shared by both parties. Table 5 illustrates respondents view on how legal risks that are to be allocated to the public sector, private sector or risk to be shared by both parties. 60% of the respondents were of the view that legal risk was preferred to be assigned to the public sector 10% went for private while 30% believe it should be shared by both parties. Figure 5 illustrates respondents view on how economic risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 62% of the respondents were of the view that economic risk should be shared, 10% went for private while 28% went for public sector.

Table 6 illustrates respondents view on how operational risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 62% of the respondents were of the opinion that operational risk should be taken care of by the private sector, 28% went for shared while 10% went for public. Figure 6 shows the respondents view on how market risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 62% of the respondents went for shared, 16% went for private, while 22% went for public. Figure 7 illustrates respondents view on how project finance risks are to be allocated to the

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public sector, private sector or risk to be shared by both parties. 60% of the respondents were of the opinion that project finance was the duty of the public, 30% went for private while 10% went for shared. Figure 8 illustrates respondents view on how project selection risks are to be allocated to the public sector, private sector or risk to be shared by both parties. 70% of the respondents were of the opinion that project selection was the delegation of the public, 10% went for private while 20% went for shared. Figure 9 shows the respondents view on the preferred risk allocation for relationship. 60% were of the opinion that this risk is better suited for the private sector, 20% went for public, while 20% went for shared. Figure 10 shows respondents view on the allocation of natural risk. 80% of the respondents strongly believe that this risk should be shared by both parties, 10% went for public while 10% went for private.

Table 3: Political risk

	Frequency	Percent (%)
Public	31	62
Private	5	10
Shared	14	28

Table 4: Construction risk

	Frequency	Percent (%)
Private	31	62
Public	4	8
Shared	15	30

Table 5: Legal risk

	Frequency	Percent (%)
Public	30	60
Private	5	10
Shared	15	30

Table 6: Operational risk

	Frequency	Percent (%)
Public	5	10
Private	31	62
Shared	14	28

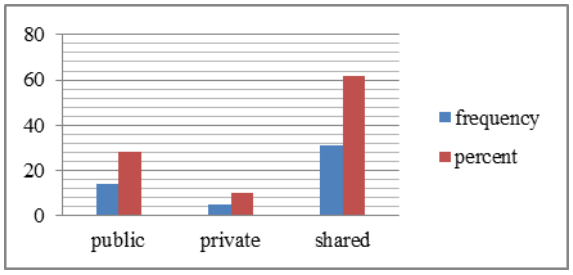

Figure 5: Economic risk

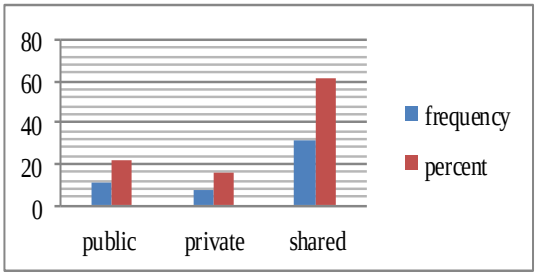

Figure 6: Market risk

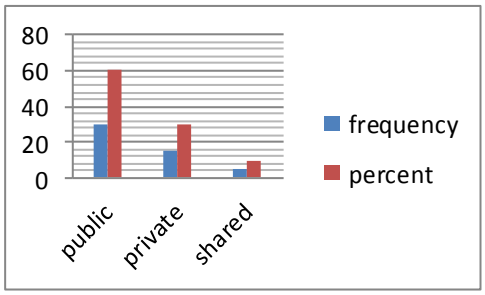

Figure7: Project finance

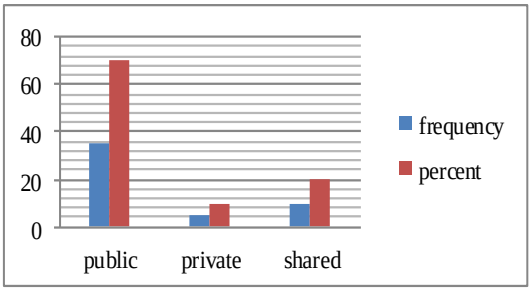

Figure 8: Project selection

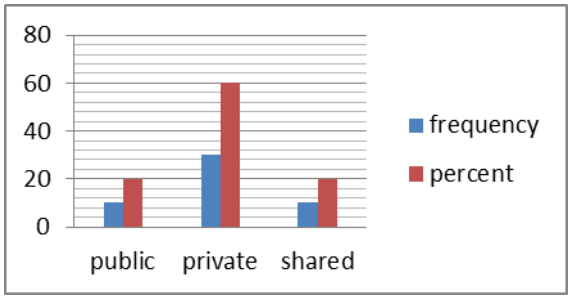

Figure 9: Relationship risk

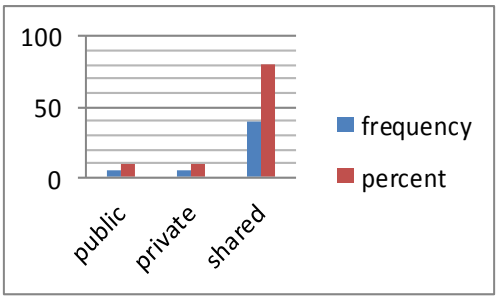

Figure 10: Natural risk

3.3 Effects of PPP on project outcome

Figure 11 shows respondents view on how PPP affects the outcome of a project. Majority of the respondent were of the view that the proper application of PPP as a means of project delivery brings about the provision of projects at improved standard time and cost with emphasis on the better cost management and cost efficiency in terms of construction cost, operational cost, as well as cost of maintenance as it is private sector driven. 72% of the respondents were of this view.

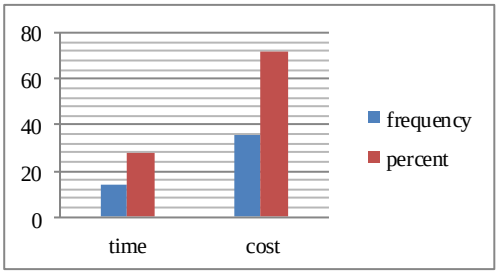

Figure 11: How PPP affect project outcome

The findings indicate that PPP is a good approach in building construction projects. Also, the findings show that adequate allocation of risk is necessary for the smooth implementation of any PPP model. The findings agree with the submission of Akintoye et al., (2003).

4. Conclusion

Based on the research carried out it was observed that risk involved in PPP projects can be categorized into ten risk factors. The risk factors were carefully studied in relation to the response of the sampled professionals. The identified risks were looked at with their preferred allocations. Analysis of the effectiveness of PPP models indicates that different PPP models have different efficiency. As a result of findings, the following recommendations were made:

- Early measures should be taken to identify unforeseen risks likely to occur in order to make contingencies for them.
- Risks factors should be assigned accordingly to bring about proper implementation and increased project performance.

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