CRITICAL SUCCESS FACTORS (CSF) DETERMINING THE IMPLEMENTATION OF PUBLIC-PRIVATE PARTNERSHIP PROJECTS

By

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***Abstract*:** Infrastructure deficit has prevented Nigerian's development and economic growth while PPP procurement is used for closing this infrastructure gap. The aim of study is to investigate CSFs for implementation of PPP projects in Nigeria. Objectives are to identify and appraise CSFs that contribute to implementation of PPP projects. Structured questionnaires were used to collect information from professionals and concessionaires who were involved in PPP projects. Purposive sampling technique was used in selecting fifty (50) respondents and only thirty-six (36) responses were used for data analysis. CSFs for successful PPP implementation are transparent and sound regulatory framework, comprehensive feasibility study and appropriate risk allocation amongst others. Implication for policy is government forming formidable legal and regulatory framework for PPP and for practice concessionaire with good consortium and adequate financial capability should be engaged for future PPP projects. Conclusions are some CSFs such as commitment and responsibility of public and private sectors, strong private consortium and realistic cost/benefit assessment amongst others are critical for PPP implementation. Recommendations are legal and regulatory framework for PPP to be developed and awareness on payment for use of infrastructure project by the public should be undertaken and leverage for fund from capital market should be embarked upon.

***Keywords*:** Critical success factor, public-private partnership, projects, Nigeria.

Introduction

Infrastructure deficit has trailed Nigerian's development and economic growth for quite a while now and the country needs more than US$ 19 trillion to provide the much required infrastructure. Unfortunately, finances of Federal government are still unable to cope with the financing of this infrastructure gap (Oyewobi, Ibrahim and Ibrahim, 2012; Olaniyan, 2013). Concerted efforts taken by Nigerian government presently in addressing this infrastructure gap are implementation of a 30-year National Integrated Infrastructure Plan (NIIP) that would positively triple the

current state of the nation's infrastructure (Rainbow, 2013) and also the enactment of the Infrastructure Concession Regulatory Commission Act (ICRC Act) in 2005 to allow private sector participation in infrastructure development through the use of the Public-Private Partnership (PPP) in infrastructure projects (Nigeria PPP Review, 2012). The giant stride taken by Nigerian government to procure infrastructure projects through the use of PPP will allow the benefits of PPP to be harnessed in Nigeria. Also, Akinyemi, Ojiako, Maguire, Steel and Anyaegbunam (2009) indicate that adoption of PPP by governments around the world is a recent phenomenon and it is important that good practice is transferred between countries considering their adoption. Similarly, Oyewobi et al. (2012) confirms that the concept of PPP is not totally new in infrastructure procurement. As at 1854 the concept of PPP was used for construction and operation of the Suez canal as well as supplying drinking water to Paris. PPP has been defined as arrangements between governments and the private sector for the purpose of providing public infrastructure, community facilities and related services (Olaniyan, 2013; Egbewole, 2011). Kulasingam (2012) also indicates that PPP is now seen as the panacea to governments not being able to finance the construction of major infrastructure. Nigeria is not alone in utilizing PPP as part of solution to its infrastructure deficit as it has been used in developed countries such as Australia, Bulgaria, Canada, Croatia, Czech Republic, Finland, France, Germany and China. It has also being used in developing countries such as Pakistan, Latin America, Asia, Nepal, India as well as in some Africa countries such as, South Africa, Egypt, Mauritius, Morocco, Ghana Malawi, Mozambique and Uganda (Public-Private Partnership in Infrastructure (PPIAF), 2012). Since PPP arrangements have been employed by these countries for their infrastructure provisions and Nigeria is also trailing this path for her infrastructure development there is a need to investigate the critical factors that guarantee successful implementation of PPP projects in Nigeria.

Factors that are considered critical for successes of PPP projects have been investigated in some previous studies in Nigeria (Dada and Oladokun, 2008; 2012; Agboola, 2011;

Olaniyan, 2013). Some of these studies were undertaken when few projects were procured through PPP arrangements and now that PPP has been embraced by both State and Federal governments for infrastructure provisions and now that more projects are procured under these arrangements the current study is undertaken to provide further insight into issues of critical success factors for implementation of PPP projects in Nigeria. Aim of study is to investigate critical success factors in the implementation of PPP projects in Nigeria. Objectives of study are to identify and appraise the critical success factors that contribute to implementation of PPP project in Nigeria. This study is significant as it provides current literature on critical success factors for implementation of PPP projects and also it contributes to PPP critical success factors literature as well as providing awareness to both government and private sector on causes of poor performance of PPP projects. This will reduce their effects on performance of future PPP projects undertaken in the country and some other developing countries utilizing PPP procurement arrangements.

Concept of PPP

Public-Private Partnership (PPP) has been defined as a contractual arrangement which is formed between public and private sector partners which involves the private sector in the development, financing, ownership and or operation of a public facility or service (Egbewole 2011; Amr, 2008). Furthermore, Egbewole (2011) explains that PPP refers to a form of co-operation between public authorities and the private sector to finance, construct, renovate, manage, operate or maintain an infrastructure or service. PPP also involves some form of risk sharing between the public and the private sector for providing the infrastructure of service. The concept of PPP is not entirely new in infrastructure development as indicated by Oyewobi et al. (2012). Documentations on PPP suggest that PPP has been used worldwide and according to Awodele, Ogunlana and Motawa (2010) developments on PPP procurement frameworks are traceable to UK government that pioneered its use through the Private Finance Initiative (PFI).

PPP utilization in infrastructure development has taken a global phenomenon and most developed and developing countries have resulted in using

this concept of which Nigeria is no exception. According to The Nation (2013) PPP has been considered and favoured as the way out for Nigeria to meet her infrastructure deficit. Also, Nigeria PPP Review (2012) also confirms that Nigeria finally took a major step towards accessing the benefit of PPP by creating the Infrastructure Concession Regulatory Commission Act that creates the enabling environment for private sector participation in infrastructure development. Similarly, in the views of African Development Bank (AFDB) (2011) that PPPs are seen as part of the solution for Nigeria infrastructure deficit because of their ability to attract finance, share risks, mobilize technical and managerial known-how, avoid the usual cost escalation associated with conventional construction contracts and change the project focus from short to long-term. The concept of PPP has been used for procuring some projects in Nigeria and the concept is still embraced by most States for their infrastructure procurement. The concept of PPP is advocated for use in development of more infrastructure projects so that governments at State and Federal levels can free its capital for use in other areas of the economy. The successes of PPP projects are as a result of some critical factors which are investigated in this study.

Models of PPP in use for Infrastructure Procurement

In construction management, substantial literatures exist on PPP especially on models of PPP that have been developed and used for procurement of infrastructure in developed countries. Lessons learnt from PPP practice that have evolved different models for PPP arrangements are documented in previous studies and works of Deloitte (2006); Amr (2008); Gunnigan and Rajput (2010); Agboola (2011); Economic and Social Commission for Asia and The Pacific (ESCAP) (2011) and Olaniyan (2013). In particular, Deloitte (2006) explains some of the common PPP models in use for infrastructure provision to include Build-Transfer (BT), Build-Lease-Transfer (BLT), Build-Transfer-Operate (BTO), Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), Build-Own-Operate (BOO), Design-Build-Finance-Operate/Maintain (DBFO, DBFM or DBFO/M), Lease, Concessions and Divestiture. Similarly, Amr (2008) indicates the use of the following models for infrastructure provisions as Concessions, Build-Operate-

Own (BOO), Build-Operate Transfer (BOT), Build-Operate-Own-Transfer (BOOT), Design-Build-Finance-Operate-Transfer (DBFO) and Design-Build-Finance-Operate-Transfer (DBFOT). Amr (2008) classifications of models of PPP are similar to that of Deloitte (2006) except that these were not provided with succinct explanations. Gunnigan and Rajput (2010) draws on Deloitte (2006) suggestions of the various types of models of PPP in use and this study aligns with Deloitte (2006) for its own discussions of the types of models in use in PPP.

The study of Agboola (2011) also aligns with Gunnigan and Rajput (2010) classifications of models of PPP except that this study explains further that all these classifications can be summarized into two broad categories as institutionalized and contractual PPP models. In addition, ESCAP (2011) explains that a wide spectrum of PPP models has emerged and can be differentiated by ownership of capital assets, responsibility for investment, assumption of risks and duration of contract. This study classifies the emerging models into five broad categories based on contracts, Lease, Concessions, Private Finance Initiative and Private Ownerships of Assets. Each of these categorizations is further discussed as follows:

Supply and Management Contract Model

A management contract is a contractual arrangement for the management of a part or whole of a public enterprise like Port Terminals. This arrangement allows the private sector skills to be brought into service design and delivery, operational control, labour management and equipment procurement. The public sector retains the ownership of the facility and equipment where as the private sector is only assigned specific responsibilities concerning the service and also not assuming the commercial risk. According to ESCAP (2011) the private sector/contractor is paid a fee to manage and operate the services. The contract period can span 3-5years. Nigeria can also benefit from use of this kind of arrangement for her infrastructure development.

Turnkey Model

Turnkey has been described as public sector procurement model for infrastructure facilities in which a private contractor is selected through a bidding process and this contractor designs and builds the facility for a fixed fee; rate or total cost.

This contractor assumes all the risks involved in both design and construction phases of the project development. This form of PPP model stems from design and builds procurement.

Affermage/Lease Models

In use of Affermage/Lease arrangements for infrastructure maintenance and operation the infrastructure must have been in existence and an operator is now selected for running, operating and maintaining this facility. In this arrangement the operator is not required to make any huge investment and can be operated with model such as Build-Rehabilitate-Operate-Transfer (BROT). In PPP Lease model the operator retains the revenue collected from customers/users of the facility but pays a specified lease fee to the contracting authority. Also, in Affermage PPP model the operator and the contracting authority both share the revenue accruing to the use of the facility by customers/users. In both Affermage/Lease PPP models the operator takes lease of both infrastructure and equipment from government for agreed period of time. Government undertakes responsibilities for the investment and assumes all the risk involved. Operator of this facility assumes all the operational risks. As part of the lease arrangement some assets are transferred on permanent basis for a period which extends over the economic life of the assets. Fixed facilities and land are leased for a longer period. Land developed by the leaseholder is transferred for a period of 15-30years.

Concessions Models

ESCAP (2011) indicates that concession arrangements involve government defining and granting specific rights to a private entity or company to build and operate a facility for a fixed period of time. Government may also retain the ultimate ownership of this facility and of the right to supply the services. Payments in concession arrangements can be both ways from concessionaire to government or from government to concessionaire. Payment by government to concessionaire can be to meet specific conditions while concessionaire can pay government for the concession rights. Payment by government to concessionaire may make the project viable commercially and to also reduce commercial risks undertaken by the private sector. Typical concession period can range between 5-50years. This form of PPP models include variants such as Build-Operate-Transfer (BOT), Build-Transfer-

Operate (BTO), Build-Rehabilitate-Operate-Transfer (BRTO), Build-Lease-Transfer (BLT) in which the concessionaire invests and operates the facility for a fixed period of time after which the infrastructure is transferred back to government. In BOT model the concessionaire bears all the operational and investment risks while government undertakes explicit and implicit contingent liabilities from loan guarantees and sub-loans provided for the financing of the project. Government retaining the ownership of the facility involves controlling the policy of the project as well as allocating risks to parties' best to assume them. Revenue for the concessionaire comes from managing and marketing the facilities to users like toll revenue from toll roads and renting of commercial space in case of prisons and markets. Concessions can be arranged as maximum revenue share for a fixed concession period or minimum concession period for fixed revenue share. Concession arrangements have been used in Nigeria for some infrastructure procurement such as toll roads, market facilities, airport amongst others and concession arrangements are relevant to the present study.

Private Finance Initiative (PFI)

In Private Finance Initiative (PFI) model according to ESCAP (2011) the private sector is responsible for the design, construction and operation of an infrastructure. In some instances the government can relinquish right of ownership of the infrastructure to the private sector. The government purchases infrastructure services from the private sector through long-term agreement. Moreover, government bears all the explicit and implicit contingent liabilities from loans taken from lenders on the project. PFI projects can be arranged on structured minimum payment by government over the fixed contract period or minimum contract period for fixed annual payments. At the end of PFI projects ownership of the infrastructure is transferred to government. A PFI contract can be awarded to a private sector that requires a Special Purpose Vehicle (SPV) support for financing the procurement of the infrastructure as may be demanded by the lenders. In PFI projects as the private sector builds and operates the services government will pay for the successful supply of services at a pre-defined standard. SPV has no incentive to reduce the

quality and quantity of services. This PPP model reduces risks of cost overruns at both design and construction phases. All the fore-going discussions on models of PPP in use in infrastructure procurement emanating from ESCAP (2011) are adopted for this study as this source of literature gives better explanations of these concepts than earlier mentioned sources.

Furthermore, the study of Olaniyan (2013) on types of PPP models in use in infrastructure procurements are drawn on World Bank (2011) documentations of the forms of PPP models in use. These categorizations are in fact similar to ESCAP (2011) owns categorization as previously explained in the earlier sections of this study.

PPP Application and Experience in Nigeria

PPP procurement arrangements have been used for infrastructure development in Nigeria. Various attempts by both the Federal government and State government to bridge the infrastructure gap in the country are documented in the various PPP projects initiated, proposed and executed for the growth of the Nigerian economy. Federal government of Nigeria (FGN) initiated the first PPP project in Nigeria through the concession of Murtala Mohammed International Airport to Bi-Courtney Aviation services from 2003-2007. This project has since been completed and also operational. Experience from this project made FGN to embark on subsequent PPP as the solution to Nigeria's infrastructure deficit for which three sectors of the economy have been identified as key areas for overall development of the country. Infrastructure, power and transport sectors are the three important sectors beckoning for development. It is in view of this that PPP projects have been invested in airport, infrastructure/urban design, roads, bridges, power, agriculture, social infrastructure, transport and water facilities in various states of the Federation.

Further PPP projects in the pipeline in Nigeria include Katampe District infrastructure design, finance, construct and transfer undertaken by Federal Capital Development Agency in Abuja and Lagos-Ibadan toll road undertaken by Federal Ministry of Works. Other projects undergoing PPP developments by Federal government include rehabilitation and upgrade of Murtala Mohammed Airport road in Lagos to be undertaken

by Federal Ministry of Works, 2nd Niger Bridge also undertaken by Federal Ministry of Works, PHCN 3 large hydro power plant to be undertaken by Federal Ministry of Power and the National Centre for Women Development also undertaken by Federal Ministry of Women Affairs in Abuja (Nigeria PPP Review, 2012). Various States in Nigeria are not left out infrastructure development as States like Cross-Rivers, Rivers, Benue, Akwa-Ibom and Lagos are in the forefront to established frameworks for PPP and also a PPP office to undertake some PPP projects in their respective states. Others like Niger, Kaduna, Zamfara, Sokoto, Yobe, Bauchi, Nassarawa, Edo, Bayelsa and Delta have also joined this bandwagon of infrastructure development in Nigeria.

Investments of States in Nigeria in PPP projects have been in toll roads, free trade zones, housing, production and agriculture. Lagos state government (LASG) have been involved in more PPP projects than the other earlier mentioned states. Investment of Lagos State Government have been in engineering facility, power, bus rapid transit system, health facilities, toll roads, housing, urban rail transit, water facilities and free trade zone developments. Reasons for this huge investment in PPP projects by Lagos State government could be transformation and economic growth of the state from urban to megacity and also in view of its teeming population than other states of the Federation. A critical look at the PPP maturity model proposed by Deloitte (2006) indicates that PPP projects undertaken by Federal government of Nigeria and other states of the country are just still within stage one of the maturity model. Efforts must be taken to institute more PPP projects, learn lessons from these past projects to move Nigeria forward to stage two of this maturity curve.

Critical Success Factors for Implementation of PPP Projects

Critical success factors for PPP projects have been researched in various developed and developing countries. The concept of critical success factors (CSF) emanated from Rockart (1982) and the Sloan school of Management as indicated in the studies of Dada and Oladokun (2008) and Olaniyan (2013). This concept was first used in the context of information systems and project management but later applied to

construction management research. According to Olaniyan (2013) critical success factor is defined as those key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his/her goals. In the same vein Rowhinson (1999) confirms that critical success factors are those fundamental issues inherent in a project which must be maintained for team working to take place in an efficient and effective manner. These definitions of CSFs are line with the conceptualization of CSFs in the present study as those factors necessary for successful implementation of PPP projects in Nigeria are investigated.

A number of research studies have identified different CSFs for PPP projects in different countries such as UK (Hard Castle, Edwards, Akintoye and Li, 2005); Australia (Jefferies, Gameson and Rowlinson, 2002); Hong Kong (Yuan, Zeng, Skibniewski and Li, 2009); China (Qiao, Wong, Tiong and Chan, 2001; Zhang, 2005a); Asia (Tam, Li and Chan, 1994). Singapore (Tiong, 1996); Lebanon (Jannali, 2004); Malaysia (Ismail, 2013); Kuwait (Mohammed, 2011) and Nigeria (Dada and Oladokun, 2008; Agboola, 2011; Babatunde, Opawole and Akinsiku, 2012; Olaniyan, 2013). Dada and Oladokun (2008) considered in their study of critical success factors for PPP in Nigeria the study of Tiong (1996) that utilized six CSFs for private contractors in competitive tendering and negotiation in BOT contracts as; technical solution advantage, financial package differentiation and guarantees, entrepreneurship and leaderships, right project identification and strength of the construction. Also, Qiao et al (2001) considered eight CSFs for BOT projects in China. These include: appropriate project identification; stable political and economic situation, attractive financial package; acceptable toll/traffic levels; reasonable risk allocation; selection of suitable subcontractors; management control and technology transfer. The study of Jefferies et al (2002) also discussed in Dada and Oladokun (2008) utilized ten CSFs for BOOT procurement in Australia. These ten CSFs are: developed legal/fiscal economic framework; avoiding delays and cost overruns; comprehensive feasibility study, project management ability and proven enterprise; having a local partner, existing infrastructure; political stability and support;

technical innovation; favourable inflation and exchange rates and financial capability and support. This study draws on some of the CSFs investigated by Jefferies et al (2002) and hence this study is relevant to the current study than studies of Tiong (1996) and Qiao et al. (2001). Zhang (2005a) conducted its own study in China on CSFs for PPP in infrastructure projects and utilized five CSFs of: favourable investment environment; economy viability; reliable concessionaire with strong technical strength, sound financial package and appropriate risk allocation. Out of these CSFs the present study draws only on appropriate risk allocation for its investigation. Dada and Oladokun (2008) owns investigation on CSFs in Nigeria also aligns with that of Zhang (2005a).

Moreover, the study of Agboola (2011) on Appraisal of PPP as a procurement system in the Nigerian construction industry also draws on the study of Tiong (1996) as earlier discussed. Agboola (2011) study also draws on the study of Hardcastle et al. (2009) that investigated eighteen CSFs in the UK construction industry. Agboola (2011) study is also relevant to the present study as twelve of these eighteen CSFs are explored for the present study. Mohammed (2011) investigated the CSFs for PPP projects in Kuwait construction industry. Mohammed (2011) utilized five CSFs of: effective procurement; project implementability; available financial market; government guarantee and favourable economic conditions. Two of these CSFs of available financial market and government guarantee are also considered in this study.

Furthermore, recent study of Babatunde, Opawole and Akinsiku (2012) on CSFs in PPP on infrastructure delivery in Nigeria is also noted. Babatunde et al. (2012) considered nine CSFs as: competitive procurement process; through and realistic assessment of costs and benefits; favourable framework; appropriate risk and risk sharing and government involvement by providing guarantee. Others CSFs also include political support, stable macro-economic conditions; sound economic policy and availability of suitable financial market. Two of these CSFs such as appropriate risk allocation and risk sharing as well as government involvement by providing guarantee are drawn on for this study. The study of Ismail (2013) on CSFs of PPP implementation in

Malaysia also examined five CSFs for Malaysia construction industry. These CSFs are: good governance; commitment of the public and private sectors; favourable legal framework; sound economy policy and availability of finance market. Ismail (2013) study is also relevant to the present study as CSFs such as good governance and availability of finance market are adopted for this present study.

In addition, Olaniyan (2013) discussed the works of Tiam et al. (1994); Hardcastle et al. (2005); Jefferies et al. (2002); Jamali (2004) and Yuan et al (2009). It is explained in Olaniyan (2013) that study of Tiam et al. (1994) developed five P's framework for successful implementation of PPP joint venture projects in the power industry in South East Asia and China. The five CSFs considered are: identification of suitable projects; partners in terms of goals and political influence; possession of project management skill; pattern of considering the structure of investment; profitability and protection of relationship between project partners. These CSFs are not relevant to the present study as none of the CSFs are considered. Jefferies et al (2002) study is also considered in Olaniyan (2013) study. Jefferies et al (2002) used ten CSFs as previously discussed in Dada and Oladokun (2008) and Olaniyan (2013) study borrowed six of these CSFs for its own investigation.

The study of Jamali (2004) also used six CSFs for effective PPP projects as: resource dependency; commitment symmetry; common good symmetry; intensive communication; alignment of cooperation working capability and converging working cultures. None of these CSFs are considered in the present study. The studies of Hardcastle et al. (2005) investigated eighteen CSFs in UK construction industry as indicated in both studies of Agboola (2011) and Olaniyan (2013). Olaniyan (2013) adopted twelve of the CSFs for its own investigation that developed totally twenty-nine of such CSFs. The present study also draws on works of Olaniyan (2013) and investigated these twenty-nine CSFs in this study. These CSFs investigated in this study are: project management expertise; transparent and sound regulatory framework; comprehensive feasibility study; commitment; private sector financial capability; integrity; government guarantee; long term planning

and effective communication. Others include: realistic cost/benefits assessment; transparent procurement process; good governance; well organized public agency; sound economic policy; political stability and supports.

Also, CSFs such as well organized private sector; stable macro-economic environment; appropriate risks allocation; integration; competitive procurement process; strong private consortium; adequate financial market and institutionalized competitive roles are considered for this study. Furthermore, complexity of project; favourable inflation, exchange and interest rates; government involvement, converging working cultures; technical innovation and local participation are also adopted for this study. All the foregoing discussed CSFs are used for investigating factors contributing to successful implementation of PPP in projects in Nigeria.

Research Methods

Literature review was undertaken to find out the concept of PPP, various models of PPP in use for infrastructure procurement, PPP application and experience in Nigeria as well as the critical success factors that are important for successful implementation of PPP in Nigeria. Research questionnaire was designed to collect data from professionals in diverse fields who have played key roles in implementation of PPP projects from both the public and private sectors. The study took place in Lagos state in Nigeria being the economic, financial and commercial nerve centre of Nigeria. Lagos state has also recently experienced the highest level of PPP involvement in infrastructure procurement than other states of the federation. Population of the study includes architects, builders, quatity surveyors, civil and mechanical engineers. The study is a survey research and purposive sampling technique was used in selecting the sample for the study from these respondents in PPP organizations that have been involved in PPP procurement of recent.

In all, fifty (50) questionnaires were sent to the various respondents selected for the study. Thirty-six (36) responses were retrieved and used for the data analysis.

Respondents were asked to rate the importance of some CSFs on their PPP projects on a Likert scale of 1 = Not important, 2 =

slightly important, 3 = moderately important, 4 = important and 5 = very important. Also, these respondents were asked to rate the criticality of some of the CSFs for successful implementation of PPP projects on a Likert scale of 1 = Not critical 2 = Fairly critical, 3 = critical, 4 = very critical and 5 = Extremely critical. Importance and critical indices were computed as follows:

Importance index (IMD) $=5n_5 +4n_4 +3n_3 +2n_2 +1n_1 /5(n_5 +n_4 +n_3 +n_2 +n_1)$ and

Criticality index (CRI) = $5n_5 +4n_4 +3n_3 +2n_2 +1n_1 /5(n_5 +n_4 +n_3 +n_2 +n_1)$ where n_5 is the number of respondents who answered 'very important' and 'extremely critical'; n_4 is the number of respondents who answered 'important' and 'very critical'; n_3 is the number of respondents who answered 'moderately important' and 'critical'; n_2 is the number of respondents who answered 'slightly important' and 'fairly critical'; n_1 is the number of respondents who answered 'Not important' and 'Not critical'. Descriptive statistical tools such as Tables, percentages importance and critical indices as well as inferential statistical tool such as chi-square and one-sample tests were used in taking decisions about appraisal of critical success factors for implementation of PPP projects in Nigeria.

Results and Discussions

The results of the study will be discussed under the following headings:

Characteristics of Respondents that participated in the study

Characteristics of respondents that took part in the study are presented in Table 1. From the results presented in Table 1 it is shown for the role of respondents in recent PPP projects that 48% of the respondents claim that they are contractors to PPP projects and the remaining 5% of the respondents both indicate that they are consultants and operators of PPP projects. From these results since most respondents claim that they are contractors to PPP projects they are in a better position to provide vital information about PPP projects in Nigeria. Also, from results in Table 1 in terms of the professions of the respondents, 92% of the respondents are civil/structural engineers while the remaining 8% of the respondents both indicate that they are professional builders and

mechanical engineers.

From these results most respondents are civil/structural engineers who have been trained in civil works of roads, bridges, airports and other civil engineering structures. They should have participated adequately in recent PPP projects in Lagos state especially in roads, water supply, power, health and transportation concession projects undertaken by the state government. These categories of respondents must have been exposed to some of these projects gaining some experiences and hence can provide valuable information about appraisal of critical success factors in implementation of PPP projects.

Table 1: Characteristics of respondents that participated in the Study.

Respondents characteristics	Frequency	Percentage (%)
Role in PPP Project		
Contractor	11	52
Consultant	5	24
Operator	5	24
Total	21	100
Profession of Respondents		
Builder	1	4
Civil/Structural Engineer	24	92
Mechanical Engineer	1	4
Total	26	100
Academic Qualification		
HND	2	6
B.Sc/B.Tech	13	38
PDG	1	3
MSc/MPM/MBA	17	50
Ph.D	1	3
Total	34	100

Moreover, further results in Table 1 about academic qualification of respondents indicate that 50% of the respondents possess Msc/MPM/MBA degrees, 38%

of the respondents have Bsc/B.Tech degrees, 6% of the respondents have HND certificates while the remaining 3% of the respondents both possess PGD and PhD degrees. Since most respondents have Msc/MPM/MBA degrees they are academically qualified to provide very vital and relevant information about appraisal of critical success factors for implementation of PPP projects in Nigeria.

Importance of Critical Success Factors for Implementation of PPP Projects

Respondents who have participated in PPP projects of recent were asked to rate the importance of some CSFs for PPP projects and results are presented in Table 2. From the results in Table 2 it is shown for effective procurement CSFs that integrity (IMD = 0.894) ranks first, transparency in procurement process (IMD =0.867) ranks second while competitive procurement process (IMD = 0.822) ranks fourth. Since integrity ranks first it suggests that for effective procurement of any PPP project the soundness and quality of the procurement process which integrity represents is an important factor for its success. Next to this, is the transparency in the procurement process which ensures that institutions, processes and decisions are available to the general public or selected representatives and hence assures effectiveness of the procurement process. Of the fourteen (14) CSFs used in rating the importance of project implementability in implementing PPP projects project management expertise (IMD =0.950) ranks first, both transparent and sound regulatory framework as well as comprehensive feasibility study (IMD = 0.939) rank second while technical innovation ranks fourteenth. Since project management expertise is rated as the most important CSF for project implementability it also suggests that utilizing and engaging project management expertise in the process of implementing any PPP project can go a long way to bring in success to the entire project. Project management experts can help plan, organize, execute and coordinate the project to a success. Also, transparent and sound regulatory framework and comprehensive feasibility study can both assist effective project implementation of PPP. This agrees with findings of Hardcastle et al (2005) which indicates that a favourable legal framework allows PPP/PFI project to be developed without

undue legal restriction on the private sector involvement. Comprehensive feasibility study preceeding the project implementation can detect several issues about the project feasibility and suggest several solutions to make the project viable.

Table 2: Ranking of CSFs in order of importance in implementation of PPP project

	Critical Success Factors	Importance index (IMD)	Group ranking	Overall Ranking	Top Ten CSFs
A.	Effective Procurement				
	• Transparency in procurement process	0.867	2nd	11th	
	• Competitive, procurement process	0.822	4th	19th	
	• Good governance	0.856	3rd	12th	
	Integrity	0.894	1st	6th	6th
B.	Project Implementation				
	• Transparent and sound regulatory framework	0.939	2nd	2nd	2nd
	• Comprehensive feasibility study	0.039	2nd	2nd	2nd
	• Appropriate risk allocation	0.828	9th	17th	
	• Commitment	0.922	4th	4th	4th
	• Well organized private sector	0.839	8th	16th	
	• Well organized public agency	0.851	7th	13th	
	• Strong private consortium	0.811	11th	21st	
	• Project management expertise	0.950	1st	1st	1st
	• Long term planning	0.889	5th	8th	8th
	• Effective communication	0.883	6th	9th	9th
	• Integration	0.822	10th	19th	
	• Complexity of project	0.806	12th	24th	
	• Converging working cultures	0.744	13th	29th	
	• Technical innovations	0.739	14th	28th	
C.	Government Guarantee				
	• Government guarantee	0.891	1st	7th	7th
	• Realistic cost/benefit assessment	0.878	2nd	10th	10th
	• Political stability and support	0.844	3rd	15th	
	• Institutionalized competitive rules	0.811	4th	21st	
	• Government involvement	0.752	5th	20th	
D.	Favourable Economic Conditions				
	• Stable macro-economic conditions	0.828	3rd	17th	
	• Sound economic policy	0.850	2nd	14th	
	• Private sector financial capability	0.897	1st	5th	5th
	• Favourable inflation, exchange and interest rates	0.756	4th	25th	
E.	Available Financial Market				
	• Adequate financial market	0.811	1st	21st	
	• Local participation	0.733	2nd	29th	

From the results in Table 2 it is also shown for government guarantee that of the five CSFs used in rating the importance of government guarantee for successful implementation of PPP projects, government guarantee (IMD = 0.891) ranks first, realist cost/benefit assessment (IMD = 0.878) ranks second while government involvement (IMD = 0.752)

ranks fifth. Since most respondents indicate government guarantee as the most important CSFs for government guarantee group of CSFs this also suggests that most private investors in Nigeria would like to be assure of government guarantee of the likely revenue that may accrue from PPP projects if undertaken in any concession project. Similarly, private investors should be assured of government policy on infrastructure projects before being undertaken. With unstable government in place policies and guarantees can change as new government takes over affairs of the country. This borders on political risk and hence private sector participants in PPP projects must be assured of government guarantee for successful implementation of any PPP project. This result also agrees with Hardcastle et al. (2005) who found out in UK construction industry that for PPP/PFI projects government guarantee is an important CSFs as government needs to assure private sector of their full confidence in PPP/PFI procurement especially revenue guarantees and committed policies to assure that investment are protected.

Moreover, other results from Table 2 in terms of favourable economic conditions, four CSFs are used in rating the importance of this group of CSFs for successful implementation of PPP projects. Of the four CSFs private sector financial capability (IMD = 0.897) ranks first, sound economic policy (IMD = 0.850) ranks second while favourable inflation, exchange and interest rates (IMD = 0.756) ranks fourth. Since most respondents indicate that private sector financial capability is the most important CSFs for this group it suggests that if the private sector partner is not financially buoyant and also not credit worthy to approach syndicate of banks for project financing that can run into millions of Naira such a project may not be undertaken. The private sector partner must be financially capable and viable to seek for different sources of finance for the project. In addition, for further results in Table 2 in respect of available financial market group of CSFs adequate financial market (IMD = 0.811) ranks first while local participation (IMD = 0.733) ranks second. Since most respondents indicate that adequate financial market is the most important CSFs it quickly suggests that if adequate financial market exists for PPP projects .it will easily secure project financing from the

market to finance the project. When such market is inadequate project financing may be extremely difficult to secure.

Furthermore, in terms of the overall ranking of the CSFs for successful implementation of PPP projects, project management expertise (IMD = 0.950) ranks first, transparent and second regulatory framework and comprehensive feasibility study (IMD = 0.939) ranks second, commitment (IMD = 0.828) ranks fourth while local participation ranks twenty-ninth. From these results project implementability CSFs and government guarantee CSFs are predominant two important factors for successful implementation of PPP in Nigeria. Similarly, from results in Table 2 it can be stated that top ten CSFs important for successful implementation of PPP projects in Nigeria are: project management expertise, transparent and sound regulatory framework comprehensive feasibility, commitment, private sector, financial capability, integrity, government guarantee and long term planning. Also, effective communication and realistic cost/benefit assessment are inclusive. These results agree with Jefferies et al. (2002) that found developed legal fiscal/economic frameworks, comprehensive feasibility study, project management expertise and financial capability and support as the CSFs for BOOT procurement in Australia. Results equally agree with Hardcastle et al. (2005) that found commitment, thorough and realistic cost/benefit assessment and government involvement by providing guarantees as CSFs in PPP/PFI projects in UK construction industry. In addition, it agrees with Agboola (2011) who also found out that government guarantee is an important CSF when appraising PPP as a procurement system in the Nigerian construction industry. The study of Babatunde, Opawole and Akinsiku (2012) also found out that favourable framework and government involvements in providing guarantee are CSFs in PPP infrastructure delivering in Nigeria which is also in agreement with results of this present study.

Appraisal of CSF for Implementation of PPP Projects

Respondents were asked to appraise the criticality of some of the CSFs for groups of projects implementability, government guarantee and favourable economic conditions. Results of the perceptions of

these respondents on the criticality of some of these CSFs are summarized in Table 3.

Table 3: Criticality indices for appraisal of CSFs for implementation of PPP projects

	Critical success factors	Criticality index (CRI)	Overall ranking
A.	Project implementability		
	Transparent and sound regulatory framework	0.894	1st
	Comprehensive feasibility study	0.833	2nd
	Appropriate risk allocation	0.833	2nd
	Commitment and responsibility of public and private sectors	0.761	6th
	Strong private consortium	0.733	8th
B.	Government Guarantee		
	Government guarantee	0.749	7th
	Realistic cost/benefit assessment	0.686	9th
C.	Favourable Economic Conditions		
	Stable macro-economic conditions	0.783	4th
	Sound economic policy	0.777	5th

From the results in Table 3 it is shown that for nine CSFs used in rating the criticality of the success factors, transparent and sound regulatory framework (CRI = 0.894) ranks first, both comprehensive feasibility study and appropriate risk allocation (CRI = 0.833) rank second, stable macro-economic conditions(CRI = 0.783) ranks fourth while realistic cost/benefit assessment (CRI = 0.686) ranks ninth. Since most respondents perceived transparent and sound regulatory framework as the most critical factor for successful implementation of PPP project, it suggests the importance of setting up robust legal and regulatory framework for PPP procurement in Nigeria. Some PPP projects here been completed and handed over both to State and Federal governments while some are still at the financial close achievement stage and some had some legal issues and non performance of the concessionaire and hence were subsequently re-awarded. There is need for public agencies in Nigeria willing to use PPP procurement to develop better legal and regulatory frameworks for further infrastructure project pursuits. Also, realistic cost/benefit assessment is being rated as the least critical successful factor. This also suggests that there is need for both public and private sector partners to investigate thoroughly a realistic cost for

the infrastructure development as well as educating the populace on the benefits derivable from use of the infrastructure and the need for the public to pay tolls, rents, or lease when the project becomes operational.

In some societies lack of education of the populace on these issues may require government to pay subsidy to concessionaire. The public must hence be adequately informed through public awareness campaign on the need for payment so that concessionaire can repay their loan facilities as well as obtain their marginal profit on such investments.

For inferential decisions to be taken on the appraisal of the CSFs for PPP project implementation one sample 't' tests of the CSFs are undertaken and results are summarized in Table 4.

Table 4: One sample 'T' tests for appraisal of critical success factors for implementation of PPP projects

	Critical success factors	Tcal.	D.F	T tab	P-value	Sig.
A.	**Project implementability**					
	Transparent and sound regulatory framework	34.41	35	1.96	0.00	S*
	Comprehensive feasibility study	33.32	35	1.96	0.00	S*
	Appropriate risk allocation	25.69	35	1.96	0.00	S*
	Commitment and responsibility of public and private sectors	23.37	35	1.96	0.00	S*
	Strong private consortium	19.72	35	1.96	0.00	S*
B.	Government Guarantee					
	Government guarantee	23.86	34	1.96	0.00	S*
	Realistic cost/benefit assessment	22.28	34	1.96	0.00	S*
C.	Favourable Economic Condition					
	Stable macro-economic conditions	23.58	35	1.96	0.00	S*
	Sound economic policy	24.57	35	1.96	0.00	S*

From the results in Table 4 it is shown that for transparent and sound regulatory framework, comprehensive feasibility study, appropriate risk allocation, commitment and responsibility of public and private sectors, strong private consortium, government guarantee, realistic cost/benefit assessment, stable macro-economic conditions and sound economic policy the calculated t-values (t_{cal} = 34.41, 33.32, 25.69, 23.37, 19.72, 23.86, 22.28, 23.58, 24.57) are higher than the tabulated t-values (t_{tab} = 1.96) hence the results are all significant. They

all support the alternative hypothesis and hence it accepted. This infers that transparent and sound regulatory framework, comprehensive feasibility study, appropriate risk allocation, commitment and responsibility of public and private sectors, strong private consortium, government guarantee, realistic cost/benefit assessment, stable macro-economic conditions and sound economic policy are the critical success factors contributing to implementation of PPP projects in Nigeria. From these ten CSFs proposed above the issue of appropriate risk allocation, strong private consortium, stable marco-economic conditions and sound economic policy come to the fore. It suggests that for successful implementation of PPP projects there must be risk allocation to both the public and private sector partners. PPP projects are fraught with a lot of risks from construction, design, political, economic, and force-majures among other sources. Strong private consortium is necessary for PPP implementation and this requires the private sector to form consortia with many authorities for design, construction, finance, maintenance to be able to adequately execute PPP projects. Stable macro-economic conditions can also contribute to successful implementation of PPP projects as it affects interest rates, inflation, borrowing rates that may affect the financing of the project. If economic conditions are unstable it may affect concessionaire investments on PPP projects. Sound economic policy also affects successful implementation of PPP project for government or public agency needs to adopt economic policies that will assure stable and growing economic environment for private sector operation and participation. Results of appropriate risk allocation, strong private consortium. Stable macro-economic conditions and sound economic policy also agree with Hardcastle et al. (2005) results that found these factors as critical for PPP/PFI projects in UK construction industry.

These foregoing discussions on appraisal of CSFs for successful implementation of PPP projects in Nigeria have proposed ten CSFs of: transparent and sound regulatory framework, comprehensive feasibility study; appropriate risk allocation, commitment, responsibility of public and private sectors, strong private consortium, government guarantee, realistic cost/benefit assessment, stable

macro-economic conditions and sound economic policy as critical success factors contributing to implementation of PPP projects in Nigeria.

Implications of the study for policy, theory and practice

Implications of this study for policy makers in government and private sector participants in PPP projects is for government to develop a sound and robust legal and regulatory framework for PPP implementation that would allow private sector free participation in infrastructure procurement without restrictions. This will entice foreign investors to Nigeria and other developing countries adopting PPP as way out of infrastructure deficit. Findings of this study provide strong evidences that support CSF theory that all CSFs are nominally considered to be 'critical' in literature but by analysis can propose ones that are more critical for success of PPP in particular situations and conditions. Findings of this study proposed some CSFs that are critical for Nigerian situation. For practice, concessionaires with good consortium and adequate financial capability should be engaged for future PPP procurements. Such concessionaire will provide realistic cost assessment of PPP projects and guard against non-performance.

Conclusions

In view of the findings emanating from this study it can be concluded that for successful implementation of PPP projects in Nigeria the contributive CSFs are: transparent and sound regulatory framework, comprehensive feasibility study, appropriate risk allocation, commitment, responsibility of public and private sectors, strong private consortium, government guarantee, realistic cost/benefit assessment, stable macro-economic conditions and sound economy policy that must be considered by both public agencies and private sector partners for future PPP projects in Nigeria and other developing countries. The study recommends that public agencies should develop viable and robust legal and regulatory framework for PPP implementation as well as government undertaking sufficient public awareness campaign on need to pay for use of infrastructure projects on concession. For Nigeria and other developing countries to move to stage two of PPP maturity model for infrastructure provision it is recommended that

dedicated PPP units at government levels should be established, leverage for funds through capital market should be undertaken and government should be involved in multiple PPP projects to create the much needed market for PPP implementation.

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