

# CONSTRAINTS TO IMPLEMENTATION OF PUBLIC PRIVATE PARTNERSHIP INFRASTRUCTURE PROJECTS IN NORTH CENTRAL, NIGERIA

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## ABSTRACT

In spite of the increasing adoption of Public Private Partnerships (PPPs) in Nigeria, the experiences have not always been positive due to failures, delays, and revocation of concessions agreements, particularly in the North Central Region. However, there are still scant studies on Critical Failure Factors (CFFs) of PPPs in the Nigerian context despite the huge failures experienced in implementation of PPPs infrastructure projects. Therefore, to bridge the knowledge gap, CFFs constraining the implementation of PPPs were identified with a view to minimising PPP projects failure in Nigeria. A total of 12 structured interviews were conducted from three PPP case studies in Niger State. Content analysis and Failure Mode and Effects Analysis (FMEA) were employed in analysing the data. A total of 18 failure and 10 success factors were identified. Corruption in public sector and, Lack of transparency and competition in procurement processes were the 2 CFFs constraining PPPs, while 4 CSFs were responsible for certain degrees of success on the projects, namely; Transparency in procurement process, Availability of suitable financial markets, Favourable investment environment and Trust between stakeholders. Therefore, these results may serve as a reference for PPP stakeholders to develop effective strategies to minimising failure in PPP projects implementation.

**Keywords:** Critical Failure Factors, Critical Success Factors, Nigeria, Infrastructure Projects, Public Private Partnership.

## INTRODUCTION

Public- Private Partnership (PPP) is a generic term for different forms of relationship existing between the public sector and the private sector with the aim of financing, developing, constructing and for the effective management of public infrastructure (Robinson *et al.*, 2010; Amadi *et al.*, 2014). These relationships are usually long term where the concession arrangement could last up to 35 years to enable the private sector repay loans sourced from the financial institutions (Smyth and Edkins, 2007). Globally, PPPs have become a popular institutional arrangement and many public infrastructure projects such as Roads, rail, airports, hospitals, housing, and schools among others have been procured through PPPs. Despite the increasing adoption of PPPs in Nigeria including the North Central region of Nigeria, the experiences have not always been positive due to controversies, failures, delays, and revocation of concessions agreements (Babatunde *et al.*, 2015). Similarly, Yang *et al.* (2010) asserts that some infrastructure partnerships between the public and private sectors in the past are yet to provide evidence of successful completion. Many empirical studies revealed that most PPP infrastructure projects implementation in Nigeria, including the North Central region of Nigeria are characterised by controversies, failures, delays, litigations, revocations among others; and has caused diminishing interests of both the local and foreign private investors. (Oyewobi, *et al.*, 2012; Sanusi, 2012; Babatunde *et al.*, 2015, Mudi *et al.*, 2015; Sanda *et al.*, 2016).

This research aims to examine Critical Failure Factors (CFFs) constraining PPP infrastructure project implementation. However, to examine the projects failure through CFFs, it is imperative to know the definition of failure. Oxford: Advanced Learner's Dictionary (Hornby, 1995) provides the definition of "failure" as "lack of success in doing or achieving something." Project failure can also be defined as the set of project objectives that did not hierarchically meet Program schedule, cost and specification (Trangkanont and Charoenngam, 2016).

Several studies have been undertaken to identify factors constraining the implementation of Public Private Partnerships infrastructure projects in both developed and developing countries. However, there are still scant studies on Critical Failure Factors (CFFs) of PPPs in the Nigerian context despite the huge failures experienced in the implementation of PPPs projects. Therefore to bridge the knowledge gap, this paper aims to identify the CFFs constraining PPPs, with a view to minimising PPP projects failure in Nigeria with specific focus on the North Central region of Nigeria.

## **PUBLIC- PRIVATE PARTNERSHIP INFRASTRUCTURE PROJECTS DEVELOPMENT IN NORTH CENTRAL, NIGERIA**

Public Private Partnerships (PPPs) is one of the Public Finance Initiatives (PFIs) and is a contractual agreement between the public and the private sectors to share financial, technical and management risks in project development and management. (Oyedele, 2012). PPP is perceived by many as the almighty formula in infrastructure provision especially with the economic crunch ravaging the Nigeria economy. PPP has been adopted in the provision of public infrastructure projects in Nigeria including the North Central region of Nigeria. These Projects includes; the concession of Nnamdi Azikiwe International Airport Abuja, concession for complete infrastructure provision at Kataempe district Abuja, the concession for the provision of Minna City housing project in Maikunkele, Construction of Minna Five Star Hotel, The Concession of Benue Cargo airport which was awarded to Aerotropolis Development Company Ltd, construction of Jos Main Market, the provision of Hospital facilities in Jos East, construction of road networks in FCT as the Federal Government pursues the implementation of the Abuja Master plan, Development of 1MW Hydropower Doma Dam in Nasarawa State, among others (Adeogun and Taiwo, 2011; Ibem and Aduwo, 2012; ICRC 2012; Taiwo, 2013; Mudi *et al.*, 2015; Ojo, 2017). As the strategies in the implementation of PPP infrastructure in North Central, Nigeria are becoming increasingly popular, many infrastructure projects implemented through PPPs have experienced delays, termination failures and controversies among others (ICRC, 2012; Sanusi, 2012; Adamu, *et al.*, 2015). Unfortunately, the level of failure, delays and termination are due to the complexity and risks associated with PPP projects in the zone and this portrays the existence of unforeseen risk or investment risk (Lucas, 2011).

### **Constraining Factors to PPP Infrastructure Projects Implementation**

Despite the huge recognition of PPPs and their increasing usage in infrastructure development, the experience of both the public and private sector with PPP has not always been positive. Some PPP projects are either held up or terminated (Kwak *et al.*, 2009). A number of researches have been carried out on the constraining factors to PPPs. For instance, Amadi (2012) in his literature search identified 45 constraints as inhibitors to the realisation of construction projects using PPPs; Kwak *et al.* (2009) identified lack of clear government objectives and commitment, complex decision making, poorly defined sector policies, inadequate legal/regulatory frameworks, poor risks management, low credibility of government policies, inadequate domestic capital markets, lack of mechanisms to attract long-term finance from private sources at affordable rates, poor transparency as well as lack of competition and efficiency. Other constraints as enumerated by Kwak *et al.* (2009) include; high tendering costs, political debates, public oppositions, and complex negotiation processes amongst others. While Izuwah (2011), identified various constraints to include; political involvement at the implementation level of projects, not enough due diligence by contracting firms, improper evaluation of financial models and risks, lack of transparency and competition in procurement processes, lack of institutional frameworks and legislation to foster PPPs and finally the inability of the public sector to appreciate partnerships in a PPP environment. Cheung (2009) identified factors constraining PPPs as unstable political environment, high bidding costs, cost overruns, excessive risks as well as lengthy bidding processes associated with PPPs. While Kaplan *et al.* (2012) in a World Bank Report posited that

lack/poor regulatory authorities as well as poor capacity building and institutional strengthening are inhibitors to the delivery of PPPs in Liberia. Double taxation as perceived by the general public, high consumer prices on the part of consumers, the continuous reliance on external consultants as well as misconceptions on the side of government officials are said to be constraining the implementation of PPPs (Colverson and Perera 2012). While Zou *et al.* (2008) opined complexity in contractual structure, inappropriate feasibility study, poorly defined sector policies, differences in interest and expectations, lack of a reliable concessionaire consortium with strong technical strength as well as unfavourable economic conditions as impeding factors to PPPs implementation. Shendy *et al.* (2011) identified lack of legislative and institutional framework, underdeveloped PPPs pipeline, and lack of coordinated public sector strategies as hindrances to PPPs. Susilawati and Armitage (2004) also found difficulty in managing partnership as a result of their mode of incorporation as partners and the dearth of transparency in partnership arrangements as impediments to PPPs. Helmy (2011) further identified long contractual procedures on the part of public agencies, lack of awareness on PPPs laws and regulations, public agency lacking experience and knowledge of PPPs, lack of land and its acquisition procedures, and frequent conflicts between consultants and clients as constraints to PPPs in Kuwait. Michael (2012) in his study in Queensland, identified dearth of specialized PPP unit, lack of independence, lack of support and political will, forecasting error as well as misplacement of risks markets in PPPs as constraints to PPPs. Wambalaba *et al.* (2012) in a study in Dakar, also identified political interference, vested interest, corruption, distrust, lack of contract transparency and lack of supportive legal structure as impediments to PPPs implementation.

### **Critical Failure Factors (CFFs) in PPP Infrastructure Projects**

Trangkanont and Charoenngam (2014) identified CFFs as projects Risks, which once properly identified, analysed, understood and evaluated by all parties, were allocated to the party best able to manage those risks. Cheung *et al.* (2010) supported that risks allocated beyond the capacity of the parties brought about failure in PPP infrastructure projects. And also, that the legal framework of most countries was established to cope with the traditional project procurement method with emphasis on command and control, as a result, PPP infrastructure projects needed special legislation by government and the establishment of the legislation was to formulate effective contractual vehicles for PPPs. (Zhang, 2005; Algarni *et al.*, 2007). Most PPP projects were aborted/ terminated before a contract was made because of the high transaction costs and ineffective legal framework (Trangkanont and Charoenngam, 2014). The study of Li *et al.* (2005); Trangkanont and Charoenngam (2014) summarised that both the public and private sectors were the cause of PPP projects failure. Government defective PPP policy and strategy led to poor procurement incentives and lack of coordination among government agencies. Inexperienced, poor- organized and less-committed public agencies including corruption, resulted in inefficient PPP project implementation. They further stated that the private sector, due to its lack of experience and expertise to handle the legal, technical, financial and managerial issues during project execution, suffered project suspension and termination. Li *et al.* (2005); El-Gohary *et al.* (2006) also supported that, strong public opposition due to people attitude on private sector profit-making and lack of transparency in contract award brought about project delay or outright termination in delivering PPP infrastructural projects. Other researches carried out by Zhang (2005); Xenidis and Agelides (2005); Iyer and Sagheer (2010) pointed out that, uncontrollable factors were a cause of PPP project failure such as change in law, resulted in unexpected requirements, political instability led to changes in PPP policy and inflation rate fluctuation had impacts on project cost.

### **Critical Success Factors (CSFs) Of PPP Infrastructure Projects**

Critical Success Factors (CSFs) are key factors that if satisfactorily met, will ensure successful performance of a project (Kwak *et al.*, 2009). These factors if not well handled will lead to failure of a project. Many studies employed the concept of CSF to determine the factors that influence the success of PPP infrastructure projects. CSF requires a day to day attention throughout the life cycle of PPP projects (Rowlinson, 1999). This is corroborated by Ram and Corkindale (2014) that CSFs requires constant and careful attention of management with a view to achieving organisation performance. The identification of CSFs is regarded as the first step towards the development of a workable and efficient PPP protocol (Zhang, 2005). In view of the increasing adoption of PPP all over the world, a number of researches have been carried out on the CSFs that have been seen to be responsible for the successful implementation of PPP in different countries, including Nigeria (Qiao *et al.*, 2001; Jefferies *et al.*, 2002; Jamali, 2004; Zhang, 2005; Li *et al.*, 2005; Alhashemi *et al.*, 2010; Babatunde *et al.*, 2012; Cheung *et al.*, 2012; Ibem and Aduwo, 2012; Onyemaechi *et al.*, 2015).

### **RESEARCH METHODOLOGY**

The study utilised primary data for the analysis. The data were sourced through a face-to-face structured interview of purposely selected participants from both the government regulators and private developers directly involved in the selected PPP case studies projects. Qualitative data were collected from three (3) PPP case studies in Niger state using structured interviews and personal observation. A total of 12 key stakeholders comprising the public sector (i.e., Ministries, Department and agencies) and the private sector which include: consultants, concessionaires, local lenders/banks, and contractors who were directly involved in the selected 3 case studies were selected and interviewed. The respondent from the public and private sector were the Chief Executive officers and senior staff member of their organisations directly involved on the PPP infrastructure project case study.

The interview guide was prepared, consisting of questions to be asked in interviews. During the interviews, the interviewees were interrogated on each eighteen identified failure factors and ten success factors using Failure Mode and Effect Analysis (FMEA) Technique, with the interviewer completing the scoring to determine the criticality of identified failure and success factors in each case study. Similarly, personal observation and review of documentary evidence were also carried out in each case study. Failure Mode and Effect Analysis (FMEA) technique was employed for the analysis of quantitative data obtained in the three PPP case studies.

### **RESULTS AND DISCUSSION**

Table 1 shows the background information of interviewees from both the public and private sector organisations in terms of types of organisation, designations and years of professional experience. The table reveals that 12 interviewees (representing 4 interviewees in each case study) were top management executives from both public and private sectors with their professional years of experience ranging from 7 to 27 years, and have directly involved in the aforementioned PPP project case studies from conception to the present project status. Also, Table 2 & 3 presents the full details of assessment of the criticality of identified failure and success factors in the PPP infrastructure case studies, using the FMEA techniques. Table 2 reveals that, out of the 18 failure factors assessed, 2 Critical Failure Factors (CFFs) constraining the implementation of the PPP project case studies were identified. These includes; corruption in public sector and lack of transparency and competition in procurement process. Similarly, Table 3 reveals that, 4 Critical Success Factors (CSFs) such as; Transparency in procurement process, Availability of suitable financial markets, Favourable investment environment, and Trust between stakeholders were responsible for the little success attained in the implementation of the PPP projects case studies.

**Table 1: Distribution and background information of interviewees from both public and private sector**

No	Interviewee organisation	Interviewee designation	Interviewee years of professional experience
<b>Case Study 1: Concession of Konayi Housing Estate Development</b>			
1	Public Sector: PPP Office	DG	27
2	Public Sector: Housing Cooperation	Chief QS	20
3	Private sector: Contractor	Managing Director	13
4	Private sector: Financial Institution	Manager	21
<b>Case Study 1: Concession of Minna Five Star hotel development</b>			
5	Private sector: Consultant	Project Manager	21
6	Private sector: Concessionaire	Manager	25
7	Private sector: Contractor	Managing Director	15
8	Public Sector: Ministry of Investment	Director	19
<b>Case Study 1: Concession of NSDC Hostel, IBBU Lapai</b>			
9	Public Sector: Physical planning unit IBBUL	Chief Architect	19
10	Public Sector: NSDC office	Director	14
11	Private sector: Financial Institution	Manager	7
12	Private sector: Contractor	Managing Director	21

organisations

**Table 2. Summary of the assessment of criticality of failure factors using FMEA technique in PPP infrastructure project case**

S/N	FAILURE FACTORS	CASE STUDY 1			REMARKS	CASE STUDY 2			REMARKS
		Public RPN	Private RPN	Total AVG RPN		Public RPN	Private RPN	Total AVG RPN	
i	Complex and cumbersome of PPP institutional framework	198	329	263	Less critical	448	712	580	Somehow critical
ii	High transaction costs	364	228	296	Less critical	810	449	630	Somehow critical
iii	Ineffective legal framework	171	48	110	Not critical	336	398	367	Less critical
iv	Poor regulatory authorities	361	357	359	Less critical	150	745	448	Less critical
v	Lack of awareness on PPP laws and regulations	510	256	383	Less critical	84	408	246	
vi	Lack of public sector to appreciate partnerships in PPP environment	702	648	675	Somehow critical	160	429	295	Less critical
vii	Communication constraint between the public and private sector	364	530	447	Less critical	504	290	397	Less critical
viii	Inexperience and less committed public agencies	490	390	440	Less critical	448	367	408	Less critical
ix	Corruption in public sector	597	950	774	Critical	630	780	705	Somehow critical
x	Lack of transparency and competition in procurement processes	356	441	399	Less critical	800	867	834	Critical
xi	Lengthy bidding process and contractual arrangements	197	555	375	Less critical	1000	254	627	Somehow critical
xii	Inconsistent risk assessment and management	66	152	109	Not critical	384	533	459	Less critical
xiii	Cost overruns	261	105	183	Not critical	120	609	365	Less critical
xiv	Inflation rate fluctuation	38	55	47	Not critical	30	439	235	Not critical
xv	Political instability and change in Government policy	13	110	62	Not critical	60	499	280	Less critical
xvi	Political involvement at the project implementation level	730	665	678	Somehow critical	700	773	737	Somehow critical
xvii	Public opposition	90	150	120	Not critical	384	475	430	Less critical
xviii	Distrust among stakeholders	480	357	419	Less critical	810	437	624	Somehow critical

Note: FMEA- Failure Mode & Effect Analysis; RPN- Risk Priority Number; Criticality Scale: 1-250-Not Critical; 250-500- Less Critical; 500-750- Critical

**Table 3. Summary of the assessment of criticality of success factors using FMEA technique in the infrastructure PPP project**

S/N	SUCCESS FACTORS	CASE STUDY 1				CASE STUDY 2			
		Public	Private	Total	REMARKS	Public	Private	Total	REMARKS
		RPN	RPN	AVG RPN		RPN	RPN	AVG RPN	
i	Transparency in procurement process	810	674	742	Somehow critical	810	764	787	Critical
ii	Thorough and realistic assessment of the cost and benefits	900	483	692	Somehow critical	504	509	507	Somehow critical
iii	Project Technical feasibility	548	689	619	Somehow critical	900	586	743	Somehow critical
iv	Consultation with end-user's	384	284	334	Less critical	160	557	359	Less critical
v	Clear project brief and client requirements	810	228	519	Somehow critical	810	271	541	Somehow critical
vi	Availability of suitable financial markets	327	555	441	Less critical	900	715	808	Critical
vii	Favourable legal and commercially oriented laws and regulations	448	507	478	Less critical	720	567	644	Somehow critical
viii	Good stakeholders' relationship	765	175	470	Less critical	392	476	434	Less critical
ix	Favourable investment environment	427	444	436	Less critical	900	933	917	Critical
x	Trust between stakeholders	696	774	735	Somehow critical	900	825	863	Critical

Note: FMEA- Failure Mode & Effect Analysis; RPN- Risk Priority Number; Criticality Scale: 1-250-Not Critical; 250-500-Less Critical; 500-750-More Critical; 750-1000-Critical

### **Assessment of criticality of the identified 18 failure factors in PPP project case studies: using FMEA technique**

In this study, the infrastructure PPP project case studies investigated include the Concession of Konayi Housing Estate Development (case study 1); the Concession of Minna Five Star hotel development (case study 2); and the Concession of NSDC Hostel, IBBU Lapai (case study 3).

During the interviews, the interviewees were interrogated on eighteen identified failure factors using Failure Mode and Effect Analysis (FMEA) technique. Thus, the full details of assessment of the criticality of identified failure factors in the above three case studies are summarised and presented in Table 2, while Table 3 presents the summary of the critical success factors.

Table 2 reveals that corruption in public sector was the only critical failure factors (CFF) that made the concession of Konayi Housing Estate Development (i.e., case study 1) suffered delay and failure in its implementation. Also, lack of public sector to appreciate partnerships in PPP environment was identified as 'somehow critical' failure factors.

Also, lack of transparency and corruption in procurement process is the critical failure factor in the Concession of Minna Five Star hotel development (i.e., case study 2). Likewise, in this PPP case study, Complex and cumbersome of PPP institutional framework, High transaction costs, Corruption in public sector, Lengthy bidding process and contractual arrangements, Political involvement at the project implementation level, and Distrust among stakeholders were considered as 'somehow critical' failure factors.

In case study 3, which is the Concession of NSDC Hostel, IBBU Lapai, the results reveal 2 CFFs that are constraining the implementation of this PPP project. These include corruption in public sector, and Lack of transparency and competition in procurement processes. While high transaction costs, lack of public sector to appreciate partnerships in PPP environment, and distrust among stakeholders were indicated as 'somehow critical' failure factors.

### **Assessment of criticality of the identified 10 success factors in PPP project case studies: using FMEA technique**

The details of assessment of the criticality of identified success factors in the three case studies are summarised and presented in Table 3

Table 3 indicates 5 somehow critical success factors that were responsible for the degree of success attained in the concession of Konayi Housing Estate Development, (case study 1) to include: Transparency in procurement process, Thorough and realistic assessment of the cost and benefits, Project Technical feasibility, Clear project brief and client requirements, and Trust between stakeholders.

The result of FMEA on criticality of the identified success factors in case study 2, which is Concession of Minna Five Star hotel development reveals Transparency in procurement process, Availability of suitable financial markets, Favourable investment environment, and Trust between stakeholders as the 4 CSFs that made this concession project achieved the little level of success being attained. Similarly, thorough and realistic assessment of the cost and benefits, Project Technical feasibility, clear project brief and client requirements, and favourable legal and commercially oriented laws and regulations were indicated as 'somehow critical' success factors (see Table 3).

Table 3 further revealed the somehow critical success factors in the Concession of NSDC Hostel, IBBU Lapai (i.e. case study 3). This includes favourable legal and commercially oriented laws and regulations, and Trust between stakeholders

### **Cross case analysis**

Based on the assessment of the criticality of identified failure factors in the three PPP project case studies, it is important to consolidate the experience from these PPP case studies, to determine if there is any convergence or discrepancy regarding the CFFs/ CSFs that are responsible for various degrees of failure and success in the three PPP case studies. Therefore, the findings from the PPP infrastructure project case studies (case study 1-3), indicated that corruption in public sector was identified as Critical Failure Factor in case studies 1 & 3. Also, the findings reveal that lack of transparency and competition in procurement process appear as the CFF in case studies 2 & 3 (see Table 2). This finding is connected to the huge corruption been perpetuated in the public sector where construction contracts are awarded without adhering to due process and diligence in the procurement process of PPP infrastructure projects. This implies that PPP infrastructure projects in these case studies experience failures due to lack of transparency, lack of competition in procurement process and the inhabited corruption that has eaten deep to the fabrics of the public service.

In the same vein, the findings from the aforementioned three PPP infrastructure project case studies (case study 1-3) with regards to the Critical Success Factors (CSFs), table 3 indicated that transparency in procurement process, Availability of suitable financial markets, Favourable investment environment, and Trust between stakeholders were identified as the CSFs in case study 2 which is Concession of Minna Five Star hotel development. This finding confirmed that the little success recorded in case study 2 was due to the transparency exhibited in the procurement process of the PPP project. The concessionaires in the PPP case study project were able to source for funds locally (i.e. from local banks). Also, the finding indicated that the investment climate was favourable for the PPP case study to succeed, and it is most likely that the project is going to achieve appreciated success because of the trust existing between the primary stakeholders involved in the PPP case study 2. (see Table 3).

#### **4.3 CFFs and CSFs emanating from case studies**

Based on the results of assessment of the criticality of identified failure and success factors using FMEA in the three PPP case studies as previously discussed (Table 2 & 3) the results identified a total of 2 Critical Failure Factors (CFFs) that made the case studies suffered certain degrees of failures as follows:

- i. Corruption in public sector
- ii. Lack of transparency and competition in procurement processes

Similarly, the FMEA results under the aforementioned PPP project case studies (i.e. case study 1-4) identified a total of 4 Critical Success Factors (CSFs) that were responsible for certain degrees of success of these PPP project case studies as follows:

- i. Transparency in procurement process
- ii. Availability of suitable financial markets
- iii. Favourable investment environment
- iv. Trust between stakeholders.

### **CONCLUSION**

The paper demonstrates the causes of PPP infrastructure projects failure in the North Central region of Nigeria by applying FMEA to identify, categorise CFFs, and also identify CSFs responsible for enhancing project success. The study concludes by identifying two critical failure factors (CFFs) through Failure Mode and Effect Analysis (FMEA). These include Corruption in

public sector and Lack of transparency and competition in procurement processes as factors constraining the implementation of PPPs. Similarly, four CSFs were found responsible for certain degrees of success on the PPP projects studied: Transparency in procurement process, Availability of suitable financial markets, Favourable investment environment and Trust between stakeholders. The identification of the constraining factors (CFFs) will assist the stakeholders in decision making, planning, and management of PPP infrastructure project delivery. The CSFs identified will positively influence policy development towards PPPs and the manner in which stakeholders (public sector and private sectors) involve each other in the development of PPP infrastructure projects. The paper recommends that the CFFs and CSFs identified are to be given paramount consideration by stakeholders involved in PPPs to ensure more successful implementation of PPPs infrastructure project and to prompt confidence in both local and foreign investors for investing in the Nigerian PPPs projects. Although, the research findings identified the CFFs/CSFs in only three PPP infrastructure project in North Central region of Nigeria, these lessons learned will help to minimise the probability of PPP infrastructure projects failure in Nigeria.

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