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# Stakeholder perceptions on critical success factors for public-private partnership projects in Nigeria

## Abstract

**Purpose** – The study aims to identify and assess the perceptions of stakeholders on critical success factors (CSFs) for PPP projects in Nigeria.

**Design/methodology/approach** – A comprehensive literature review was conducted to identify the CSFs for PPP projects, which were employed to design a questionnaire survey. In order to capture a broad perception of stakeholders, the questionnaires were administered to five different stakeholder organisations involved in different PPP projects implementation in Nigeria. Data collected were analysed using descriptive statistics, mean score, Kruskal-Wallis test, analysis of variance (ANOVA), and factor analysis.

**Findings** – The study revealed the result of mean score ranking, which indicated that all the stakeholders considered the identified twenty six CSFs important and crucial for the successful implementation of PPP projects in Nigeria. Thus, the results of Kruskal-Wallis test and ANOVA indicated that except for six (out of twenty six) identified CSFs, there is no statistically significant difference in the perceptions of the stakeholders on CSFs for PPP projects in Nigeria. The study, through factor analysis, grouped the twenty six identified CSFs into six principal factors.

**Practical implications** – This research would be of benefit to stakeholders in PPPs to be aware of CSFs that demand utmost consideration. Also the identified CSFs are expected to enhance the success rate of PPP projects.

**Originality/value** – The findings would be useful for PPP stakeholders in making decisions and in implementing PPP projects towards achieving value for money. This research will also be of interest to other academic researchers intending to investigate CSFs for PPP projects in other locations.

**Keywords** Critical success factors, PPP projects, Stakeholders, Nigeria, Implementation, Developing countries

**Paper type** Research paper

## 1 Introduction

In an increasingly competitive global environment, governments around the world are focusing on new ways to finance projects, build infrastructure, and deliver services (CCPPP, 2007). Thus, PPP is being considered and becoming the preferred method for delivering public infrastructure projects throughout the world (Gunnigan and Rajput, 2010). In view of this, over 40 countries have adopted PPPs (RICS, 2012). PPP is a tool to bring together the strengths of both public and private sectors with a view to improving the development of a nation's infrastructure. Akintoye and Liyanage (2011) assert that PPP is commonly used to accelerate economic growth, development and infrastructure delivery, and to achieve quality service delivery and good governance. In Nigeria, the infrastructure deficit is huge. This is much particular with physical infrastructure comprising roads, rails, airports, power (electricity) among others. In line with global trends, both the federal and state governments of Nigeria are ameliorating the key infrastructure challenges through the involvement of the private sector in infrastructure development via PPPs. This has led to over 51 infrastructure projects been undertaken through PPPs between 1990 and 2009 (Vetiva, 2011). In 2013 and

2014, about 66 PPP infrastructure projects were in the pipeline (ICRC, 2014). In view of increasing adoptions of PPP all over the world, for instance, many PPP projects in the UK and other developed economies are regarded as successful (Qiao *et al.*, 2001; Jefferies *et al.*, 2002; Li *et al.*, 2005a). Therefore, this triggered a number of researchers toward identifying CSFs that responsible for the successful implementation of PPP projects in different countries (see Stonehouse *et al.*, 1996; Tiong, 1996; Gupta and Narasimham, 1998; Qiao *et al.*, 2001; Jefferies *et al.*, 2002; Zhang, 2005; Li *et al.*, 2005b; Cheung *et al.*, 2012) among others.

The CSFs concept was developed by Rockart and the Sloan School of Management with the phrase first used in the context of information systems and project management (Jefferies *et al.*, 2002). Rockart (1982) defines CSFs as those limited areas where ‘things must go right’ for a particular business to survive. Kwak *et al.* (2009) describe CSFs as few key areas in which satisfactory results are necessary to ensuring successful competitive performance for the organization. Rowlinson (1999) asserts that CSFs require day-to-day utmost attention throughout project life cycle. Ram and Corkindale (2014) argue that CSFs require the constant and careful attention of management with view to achieving organisation performance goals. The identification of CSFs has been viewed as the first important step towards the development of a workable and efficient PPP protocol (Zhang, 2005).

Existing studies on PPPs in Nigeria (see Ibem, 2010; Ibem, 2011; Adeniyi *et al.*, 2011; Babatunde *et al.*, 2012; Famakin *et al.*, 2012) have focused on its housing provision, strengths, weaknesses, opportunities, threats as well as on its performance indicators. Few of these studies that examined CSFs for PPP projects (e.g. Babatunde *et al.* 2012) failed to discuss the phenomenon from primary stakeholders’ perspectives. Considering this phenomenon from primary stakeholders’ perspective will provide a richer and more practical knowledge of CSFs for PPP projects in Nigeria. This study aims to fill this gap. It is in pursuance of this aim that five different stakeholder organisations already involved in PPP projects implementation to include public sector authorities, concessionaires, local lenders/banks, consultants, and contractors are considered as respondents in this study.

## **2 Previous studies on CSFs for PPP projects**

The potential application and importance of CSFs are now being utilized in a growing number of organizations. In view of this, prior researchers have directed their attentions in identifying CSFs for PPPs to help achieving successful implementation of PPP projects. Thus, selected CSFs identified by earlier researchers for PPP projects in different countries are presented in Table I as follows:

>>>>>Insert Table I<<<<<<

**Table I.** CSFs for PPP projects identified by earlier researchers and study area

CSFs	1 Canada	2 Canada	3 India	4 China	5 USA	6 China	7 Australia	8 Hong Kong	9 Egypt	10 UK	11 Inter- national	12 UAE	13 China	14 Malaysia	15 China & Hong Kong	Total
Multi-benefit objectives	✓									✓			✓		✓	4
Appropriate risk allocation and risk sharing	✓					✓				✓	✓		✓		✓	6
Shared authority between the public and private sectors		✓			✓					✓			✓		✓	5
Government involvement by providing guarantees		✓		✓	✓					✓			✓		✓	6
Commitment/responsibility of public/private sectors		✓			✓					✓			✓	✓	✓	6
Ability to provide a suitable transfer package			✓													1
Built-in flexibility for future growth & changes			✓													1
Supportive and understanding community (i.e. Social support)			✓							✓			✓		✓	4
Short-construction period political support			✓	✓		✓				✓		✓	✓		✓	6
Appropriate project identification						✓			✓							2
Project technical feasibility						✓				✓			✓		✓	4
Quality management control						✓										1
Available financial market						✓				✓			✓	✓	✓	5
Stable macro-economic environment						✓				✓			✓		✓	4
Technology transfer						✓										1
Strong private consortium							✓			✓	✓	✓	✓		✓	6
An efficient approval process							✓									1
Innovation in the financing and equity raising methods							✓									1
Special features of bid									✓							1
Competitive financial package									✓		✓					2

CSFs	1 Canada	2 Canada	3 India	4 China	5 USA	6 China	7 Australia	8 Hong Kong	9 Egypt	10 UK	11 Inter- national	12 UAE	13 China	14 Malaysia	15 China & Hong Kong	Total
Selection of an appropriate concessionaire								✓								1
Thorough and realistic cost/benefit assessment										✓			✓		✓	3
Well-organized public agency										✓			✓		✓	3
Good governance										✓			✓	✓	✓	4
Favourable legal framework										✓			✓	✓	✓	4
Transparency in the procurement process										✓			✓		✓	3
Competitive procurement process										✓			✓		✓	3
Sound economic policy										✓			✓	✓	✓	4
Project economic viability											✓					1
Favourable investment environment											✓					1

Reference: (1- Grant, 1996; 2- Stonehouse *et al.*, 1996; 3- Gupta & Narasimham, 1998; 4- Zhang *et al.*, 1998; 5- Kanter, 1999; 6- Qiao *et al.*, 2001; 7- Jefferies *et al.* 2002; 8- Zhang *et al.*, 2002; 9- Askar & Gab-Allah, 2002; 10- Li *et al.*, 2005b; 11- Zhang, 2005; 12- Dulaimi *et al.*, 2010; 13- Chan *et al.*, 2010; 14- Ismail & Ajija, 2011; 15- Cheung *et al.*, 2012).

It is evident from Table I that studies on CSFs for PPP projects available, but the peculiarity features of PPPs to a particular country necessitated a study on CSFs particularly in Nigeria, where PPP projects are of increase. It is against this background that this study assessing CSFs that made PPP projects successful in Nigeria from the perceptions of five different stakeholder organisations directly involved in different PPP projects implementation.

#### **4. Research method**

The study adopted literature review and questionnaire survey. In order to capture a broad perception of stakeholders on CSFs for PPP projects in Nigeria, a questionnaire survey was adopted. Cheung (2009) asserts that questionnaire survey is an effective method to seek a large sample size for quantitative data analysis. Moreover, questionnaire survey was widely employed by a number of reputable earlier researchers in PPP studies (see Li *et al.*, 2005b; Zhang 2005; Chan *et al.*, 2010; Cheung *et al.*, 2012) among others. It is against this background that questionnaire survey was adopted in this study. A comprehensive literature review was carried out to identify CSFs for PPP projects. This study therefore, adopted the CSFs identified by Li *et al.* (2005b) in the UK and Chan *et al.* (2010) in China. The rationale for adopting these CSFs is due to huge recognition of CSFs for PPP projects identified by Li *et al.* (2005b) and Chan *et al.* (2010) by the industry and academic. It is on this premise that the CSFs identified by Li *et al.* (2005b) in the UK and Chan *et al.* (2010) in China were filtered to generate 26 CSFs used to design questionnaire survey. The target population for this study are primary stakeholders involved in PPP projects in Lagos metropolis, Nigeria. This includes public sector authorities (i.e. ministries, department, and agencies), concessionaires, local lenders, consultants, and contractors. Unfortunately, there is no official list stipulating the number of stakeholders that have been involved in PPP projects in Nigeria. This is affirmed by Li *et al.* (2005b) that the number of organisations involved in PPP/PFI projects are evolving and growing. Thus, the research population in PPP studies cannot be readily determined. It is on this note that the researcher contacted the Lagos State Public Private Partnerships office and Lagos State Development and Property Corporation (LSDPC) to identify the primary stakeholders (target population) through “project-based method”. Based on this, 17 PPP infrastructure projects, in which the names and addresses of primary stakeholder organisations involved in that 17 PPP projects were identified.

In the light of this, a total list of 173 primary stakeholder organisations were generated for the study (target population) comprising 31 public sector authorities; 28 concessionaires; 22 local lenders; 51 consultants; and 41 contractors that involved in identified 17 PPP infrastructure projects. Therefore, a total of 173 questionnaires were administered, out of which 119 were retrieved but after checking through the completed questionnaires, 113 representing 65.32% questionnaires were found suitable for the analysis. The questionnaire designed for this study was structured and multiple-choice type. The questionnaire was divided into two sections. Section ‘A’ comprises demographic characteristics of respondents, while section ‘B’ was designed in relating to the purpose of this study. The questions were asked on a five-point Likert scale rating with 5 being the highest of the rating. Data collected were analysed using descriptive statistics for the demographic information of respondents. Mean score was used for the ranking of 26 identified CSFs. Kruskal-Wallis test and ANOVA were employed to determine whether there is statistically significant difference in the perception of respondents in the ranking of 26 identified CSFs. Moreover, in an attempt to achieve more interpretable results, and determine the underlying relationships among the identified 26 CSFs, factor analysis was conducted. Thus, testing for suitability of data collected for factor analysis was

carried-out using Kaiser-Meyer-Olkin (KMO) and Bartlett’s tests of Sphericity through Statistical Package for the Social Sciences (SPSS). The result of KMO value indicates the sampling adequacy of 0.784 which exceeds the 0.6 value that Kaiser (1974) suggested as satisfactory for factor analysis. Also, the result of Bartlett’s test of Sphericity indicates the significance value of 0.000; this implies that the correlation is strong, appropriate, and suitable for conducting factor analysis. This is supported by Pallant (2010) that the significance value should be 0.05 or less ( $p < 0.05$ ). Therefore, it is evident that the data collected for this study were confirmed satisfactory and appropriate for conducting factor analysis.

## 5. Results and discussion

Table II reveals the distribution of questionnaires administered to the respondents. The table indicates a total of 173 questionnaires administered, out of which 113 questionnaires were retrieved representing 65.32%. Table II further indicates the breakdown of respondents. It can be seen that consultants and contractors have high number of questionnaires administered to them, despite low rate of returns compared to other respondents. This occurred as results of fatigue due to many requests to complete questionnaires were targeted on consultants and contractors in the construction industry from different higher institutions and research institutes on regular basis.

>>>>>Insert Table II<<<<<<

**Table II.** Distribution of questionnaire

Stakeholders category	Questionnaire administered	Questionnaire retrieved	Percentage
Public Sector Authorities	31	20	64.52
Concessionaires	28	25	89.29
Local Lenders	22	22	100.00
Consultants	51	23	45.10
Contractors	41	23	56.10
<b>Total</b>	<b>173</b>	<b>113</b>	<b>65.32</b>

Table III reveals the background information of respondents. It shows that the highest percentage of respondents’ academic qualifications were BSc./B.Tech (Bachelor’s Degrees) with 46.9%, followed by MSc./M.Tech (Master’s Degree) with 39.8%, and HND (Higher National Diploma) with 13.3%. The average industrial experience of respondents in public sector authorities, concessionaires, local lenders, consultants, and contractors were calculated as; 14 years, 10 years, 9 years, 12 years, and 11 years respectively. The number of PPP projects with which the respondents’ organisations have been involved indicates that all the respondents have involved in over 3 numbers of different PPP projects. It can be deduced that the respondents have appropriate academic qualifications and suitable experience in PPP infrastructure projects implementation in Nigeria. In the light of this, the information provided by these respondents was considered reliable and realistic.

>>>>>Insert Table III<<<<<<

**Table III.** Percentage distribution of the respondents' profile

Respondent Profile	Stakeholders				
	Public Sector Authorities	Concessionaires	Local Lenders	Consultants	Contractors
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
<b>Educational Qualification</b>					
HND	3 (15.0)	4 (16.0)	1 (4.5)	1 (4.3)	6 (26.1)
BSc./B. Tech	12 (60.0)	11 (44.0)	12 (54.5)	8 (34.8)	10 (43.5)
MSc./M.Tech	5 (25.0)	10 (40.0)	9 (41.0)	14 (60.9)	7 (30.4)
<b>Total</b>	<b>20 (100)</b>	<b>25 (100)</b>	<b>22 (100)</b>	<b>23 (100)</b>	<b>23 (100)</b>
<b>Years of Industrial Experience</b>					
< 5 years	3 (15.0)	7 (28.0)	7 (31.8)	2 (8.7)	1 (4.3)
6 – 10 years	2 (10.0)	7 (28.0)	5 (22.7)	8 (34.8)	10 (43.5)
11 – 15 years	6 (30.0)	5 (20.0)	9 (40.9)	8 (34.8)	9 (39.1)
16 – 20 years	4 (20.0)	3 (12.0)	1 (4.5)	3 (13.0)	2 (8.7)
> 20 years	5 (25.0)	3 (12.0)	-	2 (8.7)	1 (4.3)
<b>Total</b>	<b>20 (100)</b>	<b>25 (100)</b>	<b>22 (100)</b>	<b>23 (100)</b>	<b>23 (100)</b>
<b>Number of PPP Project Involved</b>					
1	8 (40)	10 (40)	6 (27.3)	7 (30.4)	7 (30.4)
2	4 (20)	11 (44)	5 (22.7)	7 (30.4)	9 (39.1)
3	3 (15)	3 (12)	1 (4.5)	4 (17.4)	7 (30.4)
4	1 (5)	1 (4)	1 (4.5)	4 (17.4)	-
5 & above	4 (20)	-	9 (40.9)	1 (4.3)	-
<b>Total</b>	<b>20 (100)</b>	<b>25 (100)</b>	<b>22 (100)</b>	<b>23 (100)</b>	<b>23 (100)</b>

Table IV reveals the analysis of the survey response data produced the mean score values for the 26 CSFs ranging from 3.70 to 4.50, which indicated that all the respondents considered these 26 factors crucial for the successful implementation of PPP infrastructure projects in Nigeria. It can be deduced further from Table IV that 22 factors scored mean values greater than 4.00, and the remaining 4 factors scored mean values between 3.70 and 3.87. Moreover, the overall top six ranked CSFs displayed mean score values ranging from 4.40 to 4.50 are: (i) transparency in the procurement process; (ii) effective management control; (iii) good governance; (iv) project economic viability; (v) favourable investment environment; and (vi) project technical feasibility. These study findings are similar to other notable earlier studies on CSFs for PPP projects. For instance, Tiong (1996) identified project technical feasibility as one of top six CSFs for PPP projects. Jefferies *et al.* (2002) identified transparency in the procurement process as one of top three CSFs for BOOT stadium project in Australia. Qiao *et al.* (2001) identified good governance, effective management control, and favourable investment environment among eight identified CSFs for BOT projects in China. Zhang (2005) identified favourable investment environment as one of five main groups of CSFs for PPPs in infrastructure development. Ismail and Ajija (2011) identified good governance as one of top five CSFs for PPP projects in Malaysia among others.

On the other hand, the three factors that were ranked least are political support, shared authority between public and private sectors, and multi – benefits objectives with the overall mean score values of 3.76, 3.71, and 3.70 respectively (see Table IV). Although the aforementioned three factors were ranked least, but considering their mean score values greater than 3.50, it indicates that they are very critical. This is supported by Badu *et al.* (2012) that an attribute was deemed critical if it had a mean score value of 3.5 or more. This



finding is not surprising and it is a true reflective of what is happening in PPP projects implementation in developing countries, in which the political support towards PPP is not strong and there is political renegeing of PPP contract agreements especially in Nigeria. Also, shared authority between public and private sector in PPP projects implementation in Nigeria is not always cordial. This made PPP projects implementation in Nigeria prone to controversies, litigations among others. This finding is similar to previous studies. For instance, Ismail and Ajija (2011) and Babatunde *et al.* (2012) found shared authority between public and private sectors, and political support as least ranked CSFs for PPP projects in Malaysia and Nigeria.

In order to test if there is any significant difference in the perception of the stakeholders from public sector authorities, concessionaires, local lenders, consultants, and contractors in the ranking of 26 identified CSFs, Kruskal-Wallis test was undertaken at a significance level of 5%. As it can be seen from Table IV, the results of Kruskal-Wallis test indicated that except for 6 (out of 26) identified CSFs; there is no statistically significant difference in the perceptions of stakeholders on the CSFs for PPP projects in Nigeria. Thus, the 6 CSFs, where there is difference in the perception of stakeholders include: thorough and realistic assessment of the cost and benefits; favourable legal framework; project technical feasibility; availability of suitable and adequate financial market; technical innovation and technology transfer; and favourable investment environment (see Table IV for details).

>>>>>Insert Table IV<<<<<<

**Table IV.** Stakeholder's perception on the ranking of CSFs for PPP projects in Nigeria

CSFs	Public Sector Authorities N = 20		Concessionaires N = 25		Local Lenders N = 22		Consultants N = 23		Contractors N = 23		Overall N = 113		Kruskal-Wallis Sig.
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	
Transparency in the procurement process	4.64	3	4.64	1	4.52	3	4.43	8	4.25	4	4.50	1	0.244
Effective management control	4.55	5	4.56	3	4.52	3	4.48	6	4.25	4	4.47	2	0.415
Good governance	4.64	3	4.64	2	4.57	2	4.22	16	4.25	4	4.46	3	0.124
Project economic viability	4.50	8	4.52	4	4.26	12	4.57	3	4.40	1	4.45	4	0.497
Favourable investment environment	4.32	14	4.44	6	4.61	1	4.70	1	4.00	12	4.41	5	0.004*
Project technical feasibility	4.77	1	4.12	19	4.17	13	4.52	5	4.40	1	4.40	6	0.025*
Thorough and realistic assessment of the cost and benefits	4.77	1	4.40	7	4.17	13	4.35	11	4.15	9	4.37	7	0.013*
Competitive procurement process	4.36	11	4.40	7	4.48	5	4.35	11	4.15	9	4.35	8	0.666
Sound economic policy	4.18	20	4.32	11	4.35	9	4.57	3	4.00	12	4.28	9	0.117
Commitment and responsibility of public and private sectors	4.36	11	4.24	13	4.48	5	4.30	13	4.00	12	4.28	9	0.300
Availability of suitable and adequate financial market	4.14	22	4.16	17	4.04	17	4.70	1	4.25	4	4.26	11	0.011*
Good partners' relationship	4.23	17	4.40	7	4.48	5	4.22	16	3.90	17	4.25	12	0.112
Well organized and committed public agency	4.36	11	4.24	13	4.39	8	4.22	16	3.90	17	4.22	13	0.794

CSFs	Public Sector Authorities N = 20		Concessionaires N = 25		Local Lenders N = 22		Consultants N = 23		Contractors N = 23		Overall N = 113		Kruskal -Wallis Sig.
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	
Technical innovation and technology transfer	4.45	9	4.52	4	4.09	16	4.43	8	3.60	23	4.22	13	0.000*
Appropriate risk allocation and risk sharing	4.55	5	3.76	24	4.30	10	4.48	6	3.90	17	4.20	15	0.194
Clear project brief and client requirements	4.23	17	4.12	19	4.30	10	4.17	21	4.20	8	4.20	15	0.761
Appropriate project identification	4.23	17	4.36	10	3.96	19	4.13	22	4.30	3	4.20	15	0.165
Stable macroeconomic conditions	4.41	10	4.20	15	3.87	23	4.39	10	3.95	15	4.16	18	0.121
Strong and good private consortium	4.27	16	4.20	15	4.17	13	4.30	13	3.80	21	4.15	19	0.102
Consultation with end-users	4.05	23	4.28	12	4.04	17	4.26	15	3.95	15	4.12	20	0.908
Favourable legal framework	4.55	5	4.04	21	3.48	26	4.22	16	4.05	11	4.07	21	0.013*
Government involvement by providing a guarantee	4.32	14	4.16	17	3.96	19	4.22	16	3.60	23	4.05	22	0.089
Social support	4.18	20	3.80	23	3.96	19	3.78	24	3.65	22	3.87	23	0.277
Political support	3.73	26	3.92	22	3.65	24	3.65	26	3.85	20	3.76	24	0.885
Shared authority between public and private sectors	3.95	25	3.44	26	3.91	22	3.91	23	3.35	26	3.71	25	0.500
Multi – benefits objectives	4.05	23	3.72	25	3.57	25	3.70	25	3.45	25	3.70	26	0.184

\*Significant at 5%

The aforementioned 6 CSFs where there is statistically significant difference in the perceptions of stakeholders (see Table IV) were further tested with one-way analysis of variance (ANOVA) to ascertain if there is statistically significant difference exist among five groups of stakeholders comprising public sector authorities, concessionaires, local lenders, consultants and contractors. In the process, hypothesis was postulated as follows:

Null hypothesis1 ( $H_0$ ): There is no significant difference in the perception of stakeholders on thorough and realistic assessment of the cost and benefits; favourable legal framework; project technical feasibility; availability of suitable and adequate financial; technical innovation and technology transfer; and favourable investment environment as CSFs for PPP projects.

Alternative hypothesis1 ( $H_1$ ): There is significant difference in the perception of stakeholders on thorough and realistic assessment of the cost and benefits; favourable legal framework; project technical feasibility; availability of suitable and adequate financial; technical innovation and technology transfer; and favourable investment environment as CSFs for PPP projects.

>>>>>Insert Table V<<<<<<

**Table V.** ANOVA result on 6 CSFs for PPP projects

6 CSFs	Statistical comparison	Sum of Squares	df	Mean Square	F	Sig.
Thorough and realistic assessment of the cost & benefits	Between groups	5.45400504	4	1.36350126	3.14	0.017
	Within groups	46.9353755	108	0.43458681		
	Total	52.3893805	112			
Favourable legal framework	Between groups	13.5496523	4	3.38741308	4.30	0.003
	Within groups	85.0167194	108	0.787191846		
	Total	98.5663717	112			
Project technical feasibility	Between groups	6.52014201	4	1.6300355	2.74	0.032
	Within groups	64.3471146	108	0.595806617		
	Total	70.8672566	112			
Availability of suitable and adequate financial	Between groups	6.03052608	4	1.50763152	3.29	0.014
	Within groups	49.526996	108	0.458583297		
	Total	55.5575221	112			
Technical innovation and technology transfer	Between groups	12.5758662	4	3.14396656	6.53	0.000
	Within groups	51.9728063	108	0.481229688		
	Total	64.5486726	112			
Favourable investment environment	Between groups	6.33006611	4	1.58251653	2.54	0.043
	Within groups	67.2805534	108	0.622968087		
	Total	73.6106195	112			

The results of one-way ANOVA reveals that the statistical significance values obtained for the 6 aforementioned CSFs (see Table V) are lesser than 0.050 (i.e.  $p < 0.050$ ). This confirms that alternative hypothesis is accepted. This means there is significant difference in the perception of stakeholders on the aforementioned 6 CSFs for PPP projects (see Table V). Based on the result of ANOVA, it is therefore confirmed that there is statistically significant

difference in the perception of stakeholders on 6 (out of 26) CSFs for PPP projects in Nigeria. This difference can be attributed to the fact that the public sector (including ministries, department and agencies) and private sector (including concessionaires, local lenders, consultants and contractors) as a separate entity with different ideology has divergent views as to the factors they consider suitable and critical to the PPP projects implementation. For instance, private sector is more concerned on the benefits and profits to be derived from the partnerships, while public sector is concerned on the prompt execution of the projects. This made the private sector perceived these 6 CSFs (see Table V) to include thorough and realistic assessment of the cost and benefits, project technical feasibility among others more important than public sector for the successful implementation of PPP projects in developing countries particularly Nigeria. This finding is similar to previous studies. For example, Ismail and Ajija (2011) found a statistically significant difference on 4 (out of 18) CSFs in the perceptions of public and private sectors in PPP projects in Malaysia among others.

Table VI reveals the details of factor analysis conducted on the 26 identified CSFs. Principal Component Analysis (PCA), Kaiser's criterion or eigenvalues, and scree plot were employed when conducting factor analysis. This is supported by Pallant (2010) that Kaiser's criterion or eigenvalues had been criticised for retaining too many factors, but advocated for the usage of scree plot to verify the number of factors to be retained. Therefore, PCA was carried out to identify underlying factors. It was discovered that more factors had eigenvalues greater than 1, but after using scree plot to check (see Figure I) the point at which the shape of the curve changes direction and become horizontal. It is evident that 6 factors agreed with scree plot (see Figure I for details). In view of this, the 6 factors were retained after satisfying the Kaiser's criterion or eigenvalues, and scree plot requirements. Therefore, Table VI contains the 6 factors with their eigenvalues, percentage of the variance, the cumulative percentage of the variance in each factor, and factor loading. It can be seen from Table VI that the eigenvalues for the 6 factors retained ranging from 1.309 to 7.521. The total variance explained by these 6 factors extracted was amounted to 60.133%. The factor loading for each 26 CSF is greater than 0.30. This implies that the identified 26 CSFs are important. This is supported by Kline (2002) that variables with factor loading of 0.30 or higher can be considered significant (see Table VI for details).

>>>>>Insert Table VI<<<<<<

**Table VI.** Principal factor extraction, varimax rotation and total variance explained on CSFs in PPPs

Factor	Factor Loading	Initial Eigenvalues		
		Total	% of Total Variance Explained	Cumulative% of Variance Explained
<b><i>Factor 1: Reliable concession arrangement with due diligence</i></b>				
1. Transparency in the procurement process	0.797			
20. Effective management control	0.700			
3. Good governance	0.685			
4. Well organized and committed public agency	0.662			
2. Competitive procurement process	0.611	7.521	28.928	28.928
7. Thorough and realistic assessment of the cost and benefits	0.588			
22. Appropriate project identification	0.496			
25. Favourable investment environment	0.341			
<b><i>Factor 2: Serious commitment with adequate technical strength</i></b>				
26. Good partners' relationship	0.727			
11. Commitment and responsibility of public and private sectors	0.696			
5. Social support	0.628	2.376	9.138	38.066
10. Appropriate risk allocation and risk sharing	0.594			
19. Technical innovation and technology transfer	0.489			
<b><i>Factor 3: Favourable economic environment</i></b>				
18. Availability of suitable and adequate financial market	0.766			
16. Stable macroeconomic conditions	0.705	1.635	6.287	44.353
17. Sound economic policy	0.634			
<b><i>Factor 4: Government support with enabling legislation</i></b>				
14. Multi – benefits objectives	0.667			
13. Government involvement by providing a guarantee	0.635			
8. Favourable legal framework	0.533	1.408	5.417	49.770
9. Project technical feasibility	0.484			
<b><i>Factor 5: Bankable project with adequate stakeholders involvement</i></b>				
24. Project economic viability	0.787			
23. Clear project brief and client requirements	0.653	1.385	5.328	55.098
21. Consultation with end-users	0.527			
<b><i>Factor 6: Strong “political will” with committed private partners</i></b>				
15. Political support	0.758			
12. Strong and good private consortium	0.582	1.309	5.035	60.133
6. Shared authority between public and private sectors	0.491			

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.  
 Rotation converged in 12 iterations.

>>>>>Insert Figure I<<<<<<

The variables with higher loadings on a factor play a more important role in naming the factor (see Table VI for details). Thus, the 6 principal factors derived after conducting factor analysis are interpreted as follows:

1. Factor 1: Reliable concession arrangement with due diligence
2. Factor 2: Serious commitment with adequate technical strength
3. Factor 3: Favourable economic environment
4. Factor 4: Government support with enabling legislation
5. Factor 5: Bankable project with adequate stakeholders involvement, and
6. Factor 6: Strong “political will” with committed private partners.

### **Factor 1: Reliable concession arrangement with due diligence**

This factor accounts for 28.9 percent of the total variance between CSFs (see Table VI). A reliable concession arrangement with due diligence must demonstrate transparency in the procurement, effective management control, and good governance by all stakeholders involved throughout PPP process. These three components have a high factor loading (Table VI: 0.797, 0.700, and 0.685 respectively). The other three factor loading components are well organized and committed public agency, competitive procurement process, and thorough and realistic assessment of the cost and benefits with factor loading (Table VI: 0.662, 0.611, and 0.588 respectively). The last two components include appropriate project identification, and favourable investment environment with factor loading (Table VI: 0.496 and 0.341 respectively). The two components are very important with a view to identifying suitable projects for PPPs because PPPs do not suit every type of infrastructure project. Also, favourable investment environment would induce confidence in both local and foreign investors to participate in PPPs market.

### **Factor 2: Serious commitment with adequate technical strength**

This factor accounts for 9.1 percent of the total variance between CSFs (see Table VI). Serious commitment with adequate technical strength is crucial to smooth the development of PPPs. In achieving these, there must be good partners' relationship, commitment and responsibility of public and private sectors, and social support. These three components have a factor loading (Table VI: 0.727, 0.696, and 0.628 respectively). The other two components include appropriate risk allocation and risk sharing, and technical innovation and technology transfer with loading factor (Table VI: 0.594 and 0.489 respectively). PPPs involved various stakeholders with different interests, thus the attitude of each stakeholder has an influence on PPP outputs. It is also evident that public opposition has slow down the development of a number of PPP projects. It is on this note that serious commitment of all stakeholders should be sought.

### **Factor 3: Favourable economic environment**

Favourable economic environment are very significant for PPP project development both in developed and developing countries. This factor is amounted to 6.3 percent (see Table VI) of the total variance between the CSFs. The CSF components include availability of suitable and adequate financial market, stable macroeconomic conditions, and sound economic policy. These three components have a factor loading (Table VI: 0.766, 0.705, and 0.634 respectively). The willingness of private investors to participate in PPP projects depends greatly on the environment in which these projects are operated. Therefore, the host government should create a favourable environment with stable economic and financial conditions among others to promote successful implementation of PPP projects.

### **Factor 4: Government support with enabling legislation**

This factor accounts for 5.4 percent of the total variance between CSFs (see Table VI). The CSF components include multi – benefits objectives, government involvement by providing a guarantee, favourable legal framework, and project technical feasibility. These four components have a loading factor (Table VI: 0.667, 0.635, 0.533, and 0.484 respectively). Government support in form of guarantee is imperative in PPP to trigger the private sector confidence. Also, solid legal framework for PPPs is needed to specify the 'rules of the game' for the private sector and reduce project risk. PPPs have more chances of success when a detailed feasibility study has been undertaken. Therefore, a detailed feasibility study should

be carried out by both public and private sector experts to ascertain the work requirements of the project to reduce variation orders to barest minimum.

#### **Factor 5: Bankable project with adequate stakeholders' involvement**

This principal factor accounts for 5.3 percent of the total variance between CSFs (see Table VI). The CSF components are project economic viability, clear project brief and client requirements, and consultation with end-users. These three components have a factor loading (Table VI: 0.787, 0.653, and 0.527 respectively). It is evident that PPPs require strong public sector capabilities to determine the economic viability of the project at very early stage because not every infrastructure projects are suitable for PPPs. Also, both primary and secondary stakeholders must be engaged and informed at very early stage of PPP process.

#### **Factor 6: Strong “political will” with committed private partners**

This factor accounts for 5.0 percent of the total variance between CSFs (see Table VI). The CSF components are political support, strong and good private consortium, and shared authority between public and private sectors. These three components have a factor loading (Table VI: 0.758, 0.582, and 0.491 respectively). Strong political support is needed to increase developmental assistance, capacity building among others for the successful implementation of PPPs, particularly in developing countries. The private consortium must have financial capabilities, skilled and experienced personnel to develop, manage, execute, and operate the project. Equally, the public and private sector should respect each other when carrying out negotiations during the procurement process.

### **6. Conclusions**

Understanding and enhancing knowledge of PPPs continue to be a matter of significance and importance. The peculiarity features of PPPs to a particular country necessitated this study on CSFs. The study revealed the mean score ranking of twenty six identified CSFs for PPP projects in Nigeria, and the mean score values for all the identified twenty six CSFs are very high. This implies that the entire twenty six identified CSFs are important for successful implementation of PPP projects in Nigeria. This finding affirmed the existing literature that regarded these factors critical. The overall ranking of CSFs among five different stakeholder organisations indicated that transparency in the procurement process, effective management control, good governance, project economic viability, favourable investment environment, and project technical feasibility were the six top ranked CSFs for PPP projects in Nigeria. The results of Kruskal-Wallis test and ANOVA test indicated that except for six (out of twenty six) identified CSFs; there is no statistically significant difference in the perceptions of the stakeholders on CSFs for PPP projects in Nigeria. This few difference in the perception of stakeholders could be attributed to divergent views and priorities as to the factors they consider suitable and critical to the PPP projects implementation, and variations in the conditions of respective PPP projects coupled with the experience of stakeholders in PPP projects in Nigeria among others. The study, through factor analysis, grouped the twenty six identified CSFs into six principal factors. The factors include: reliable concession arrangement with due diligence; serious commitment with adequate technical strength; favourable economic environment; government support with enabling legislation; bankable project with adequate stakeholders involvement; and strong ‘political will’ with committed private partners. This study is not without limitations. First, although the use of questionnaire survey allows large sample to be captured, having other methods together such as interviews and the use of case study approach may enrich the findings. Second, a discussion on the relevance and application of stakeholder theory in PPP projects could have been provided to



theoretically underpin this study. Despite its limitations, the findings emanating from this study prove to be more reliable as they come about not merely from a library investigation but rather from field work approach which involved getting stakeholders shared their true practical experiences. Therefore, this study is expected to enhance the success rate of PPP projects in Nigeria. Thus, further research should be conducted to investigate the maturity of stakeholder organisations on CSFs for PPP projects.

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