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An Evaluation of the Success of Public-Private Partnership (PPP) Housing Project in Abuja, Nigeria

Muhammad Zayyanu^{1*}, Foziah Johar²

¹Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia

²Centre for Innovative Planning and Development, Faculty of Built Environment, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia.

* Correspondence: danillelamz@yahoo.com

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ABSTRACT

Recently, there is an increasing reliance on public-private partnerships (PPP) in the provision of housing and associated infrastructure. Although monitoring and evaluation are crucial components of most PPP policies, the performance of many PPP projects are self-defined by the advocating governments. The ineffectual evaluation of PPP projects would trigger a costly loss of competitive value and would lead to delivery of products or services below optimum quality. Using Structural Equation Modelling (SEM) approach, this article evaluates the success of the PPP housing project in Abuja, Nigeria. The findings of the study indicate that the factors “favourable investment environment”, “efficient procurement process” and “appropriate risk allocation” have significant influence on the success of the PPP housing project in Abuja, Nigeria. The findings should assist PPP stakeholders to improve their understanding of the factors that influence the success of PPP housing projects in Nigeria.

Keywords: Success Evaluation; Public-Private Partnership; Housing Projects; Nigeria

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AN EVALUATION OF THE SUCCESS OF PUBLIC-PRIVATE PARTNERSHIP (PPP) HOUSING PROJECT IN ABUJA, NIGERIA

Muhammad Zayyanu*¹ & Foziah Johar²

¹ Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia

² Centre for Innovative Planning and Development, Faculty of Built Environment, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia.

*daniellelamz@yahoo.com

www.nzaar.com

Abstract

Recently, there is an increasing reliance on public-private partnerships (PPP) in the provision of housing and associated infrastructure. Although monitoring and evaluation are crucial components of most PPP policies, the performance of many PPP projects are self-defined by the advocating governments. The ineffectual evaluation of PPP projects would trigger a costly loss of competitive value and would lead to delivery of products or services below optimum quality. Using Structural Equation Modelling (SEM) approach, this article evaluates the success of the PPP housing project in Abuja, Nigeria. The findings of the study indicate that the factors “favourable investment environment”, “efficient procurement process” and “appropriate risk allocation” have significant influence on the success of the PPP housing project in Abuja, Nigeria. The findings should assist PPP stakeholders to improve their understanding of the factors that influence the success of PPP housing projects in Nigeria.

Keywords: Success Evaluation, Public-Private Partnership, Housing Projects, Nigeria

1. Introduction

Inadequate finances throughout the developing world is seriously outstripping the capacity of most governments to match the demand for housing and public infrastructure with an adequate provision (1). The developing countries of the world are witnessing an extreme financing need for housing and associated infrastructure projects beyond the capacity of the public sector (2). Consequently, many states adopt public-private partnership (PPP) as an alternative delivery strategy (3).

In order to meet the burgeoning housing need in Abuja, the FCTA introduced the mass housing scheme in the year 2000 under its public-private partnership (PPP) program. The program aims to bridge the wide gap between the supply and demand in housing stock in the federal capital territory (FCT). While the government is to provide primary infrastructure and allocate land to private developers under the scheme, the private developers, on the other hand, are to provide secondary and tertiary

infrastructure as well as develop and sell houses to members of the general public.

However, the scheme recorded little success (4) due to lack of adequate planning (5) and implementation (6). With a success rate of 32.25 % (5), the scheme could not deliver the much-desired housing units to the residents of the federal capital territory.

The increasing reliance on public-private partnerships in the provision of infrastructure and services is well documented (7). However, in worldwide practices, the application of PPP has not always been positive (8, 9). With the mixed story, debate on PPPs has currently shifted focus towards evaluating the explanatory factors that account for success of PPP projects. To maintain effectiveness in a highly competitive markets, the performance of PPP projects need to be properly evaluated (10).

This article focuses on evaluating the success of the PPP housing project in

Abuja, Nigeria. The article reviewed literature on measurement of project success and success of PPP projects. Using a structural equation modelling approach, this article evaluates the extent of contribution of critical factors in the success of the PPP housing project in the study area.

2. Literature Review

2.1 Measurement of project success

Project success remains a complex attribute (11) because the accuracy of its measurement depends largely upon the method adopted by the assessor (12). As described by (13), success is an intangible perceptive feeling whose measuring criteria varied among persons, phases of the project and with management objectives. Success is one of the most subjective term used in project management (14) and many of the claims for PPP success are self-defined by those making the assessments (15).

Various authors adopt different dimensions for measuring project success. For instance, (16) categorized the measurement of project success into four dimensions. The first dimension relates to project 'effectiveness' regarding whether the project is completed on time and within specified budget. The second dimension, which is customer oriented, relates to 'when' the project is delivered to the beneficiaries and whether it meets the functional requirement and technical specifications. The third dimension, which relates to 'business performance', is regarding whether the project has achieved cycle time, yield and quality and overall improvement of organization performance. The fourth dimension concerns long term and future 'outcomes' of the project.

On the other hand, (17) suggests that project success should be evaluated at two levels: project outcome and participant satisfaction. Using a comprehensive approach, (18) developed four criteria to assess project success. These criteria include safety, economy, time and

flexibility to users. As supported by (19), a successful project is one that is achieved on a budget, on time, conforms to specifications, users' expectations, quality workmanship and minimize construction exacerbation. Further developing from the works of (20), (21) included technology transfer, and friendliness of environment as measures project success.

2.2 The success of PPP projects

Public-private partnership is a long-term contractual relationship between public and private entities to share risk for the design, construction, and operation of infrastructure or services (22). It involves various processes and a great deal of input from both the public and private sectors, with the major aim of achieving project success.

Over the last three decades, public-private partnership has gained popularity as one of the most viable options for remedying the observed inefficiency in traditional service delivery approaches (23). However, the international experience with PPP has not always been positive (24). The mixed results in the application of PPP have, therefore, called for an evaluation of PPP projects to establish the explanatory factors that influence their success or failure. Accordingly, many studies employed the concept of critical success factors to evaluate the success of PPP projects. Critical Success Factors (CSFs) are those few key areas, which if satisfactory, will ensure successful performance of an organization or project (25). The understanding of the critical success factors is key to achieving success (26).

Many authors have developed various list of factors critical to the success of PPP projects. For instance, (27) identified factors influencing the success and failure of Build-Operate-Transfer (BOT) infrastructure development in Asia, (28) identified success factors that contribute to the achievement of best value in PFI projects in UK. (29) identified CSFs for

public-private partnership implementation in the telecommunication sector in Lebanon. (30) identified eight independent CSFs for Build, Own and Transfer (BOT) projects in China. (31) identified CSFs from reflection of an Australian sports stadium project. Table 1 gives a list of critical factors that influence the success of PPP projects based on the review of previous literature.

Table 1: List of CSFs of PPP projects

CSFs	Authors
Transparent procurement process	Li et al. (2005), Chan et al. (2012), Babatunde et al. (2012), Hwang et al. (2012)
Competitive procurement process	Hardcastle et al. (2005), Hemming (2006a), Atmo and Duffield (2014)
Good governance	Hayllar (2010), Helmy (2011), Ismail (2013)
Well-organized and committed public agency	National Audit Office, (2001); Scharle (2002), Hemming (2006b); Li et al (2005); Cheung et al (2012) Aigbavboa et al. (2014)
Trust and openness between parties	Ong and Lenard (2002), Jamali(2004a), Armitage and Susilawati (2004), Karlsen et al. (2008), Robinson et al. (2010)
Stable political system	Babatunde et al. (2012), El-Sawalhi and Mansour (2014)
Stable economic system	Helmy (2011), Chan et al. (2012), Babatunde et al. (2012)
Efficient legal framework	Li et al. (2005), Abdul- Aziz and Kassim (2011), Babatunde et al. (2012)
Availability of financial market	Hwang et al. (2012), Ismail (2013), Li et al. (2005)
Supportive community	Heinke and Wei (2000), EFCA (2001), Ng et al. (2010)
Government guarantee	Hemming (2006a), Jamali (2004b), Chan et al. (2012)
Efficient approval process	Jefferies et al (2002)
Consistent monitoring	Abdul- Aziz and Kassim (2011)
Action against errant developers	Abdul- Aziz and Kassim (2011)
Equitable risk allocation in contractual agreement	Thomson et al. (2005), Li et al. (2005), Zhang (2005), Jin and Doloï (2008), Kwak et al (2009), UN-Habitat (2011)
Equitable risk allocation in operational agreement	Hwang et al. (2012), Muhammed et al. (2012), Wibowo and Alfen (2015), Ameyaw and Chan (2015)
Equitable risk allocation in loan agreement	Zhang (2005), Nsasira et al. (2013)
Equitable risk allocation in design/build contract agreement	Zhang (2005), Nsasira et al. (2013)
Technical competence	Jefferies (2002), Zhang (2005)
Financial capability	Jefferies (2002), Zhang (2005)
Rich experience in partnering	Li et al. (2005), El-Sawalhi and Mansour (2014)

2.3 Evaluation of the success of PPP projects

Evaluating the success of public works projects in traditional delivery approaches is fairly straightforward. However, establishing the explanatory factors that influence the success of public-private partnership projects is rather complex and challenging. The intrinsic problems in PPP evaluation mostly stem from the dynamic nature of the PPP process. PPPs are quite distinct from traditional delivery strategies due to the nature of their contractual relationships and long concession period. Evaluating PPPs is more difficult than traditional procurement due to complexity and broad risks involved in PPP (32). For instance, a typical traditionally procured project is regarded as successful or failed by examining its outputs and outcomes. The outputs-outcomes based evaluation allows policymakers to identify how policies and projects can be adjusted to attain their goals (33). However, measuring the success of public-private partnership projects using outcome-based indices is challenging due to reliance of such projects on tools that involve substantial interaction with multiple parties.

Similarly, the application of other traditional project evaluation techniques also seems to be quite inappropriate for evaluation of PPP projects. For instance, the conventional ex-post technique is widely questioned as not being sufficient enough to assess the successful implementation of PPP projects. The ex-post evaluation, which is product-oriented measurement, is carried out after project completion mainly for review purpose. For this reason, the method, cannot provide insight that adequately capture the dynamic nature of PPP project operations (34). Similarly, using the 'Iron Triangle' (35) time, cost and quality measures may not adequately reflect the exclusive success of PPP infrastructure development projects (36). For instance, the over-reliance on public sector comparator (PSC) technique, as a cost measure, in the

assessment of value for money (VfM) of PPP projects do not reflect the complexity of PPP procurement process (37).

To address the complex nature of public-private partnerships, (38) developed a key performance indicators model for measuring the success of PPP projects. However, (39) criticised the (38) model for its over-emphasis and limitation to only the 'partnership' phase of project development. The authors contended that the model ignored to measure "initiation and planning" and "procurement" phases which are equally important phases of PPP project development (40). Accordingly, (39) suggested the adoption of a comprehensive process-based evaluation framework that deals with the multiple stages and complexity in PPP. However, the (39) "process-based" framework is limited in application as no validation has been conducted to concretise its underlying hypothesis (40).

Borrowing from the arguments that success factors determine success of projects (41) and identification of success factors is key to achieving success of PPP projects (42), this article adopted SEM approach to evaluate the success of PPP projects in the study area. The approach involves evaluating the extent of contribution of the success factors in the overall success of PPP housing project in Nigeria. The approach evaluate the success of PPP projects across the multiple stages of partnership from project selection to contract management.

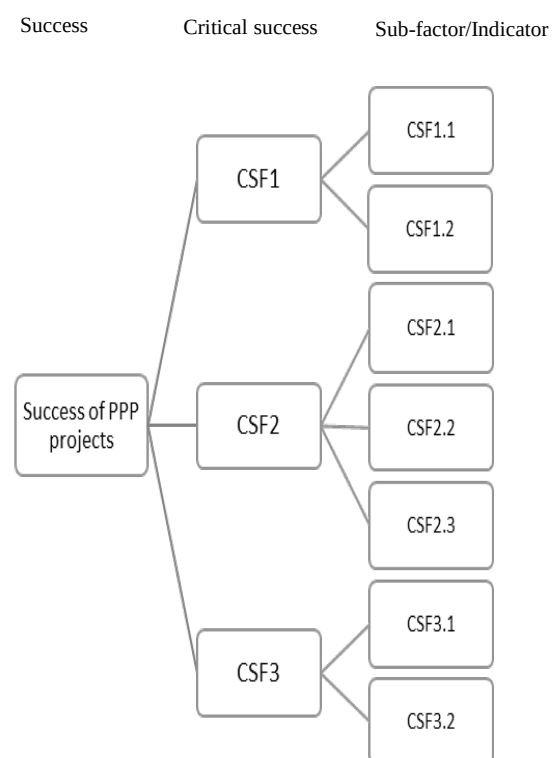
Research Methods

To achieve the objective of the study, a questionnaire survey was conducted with both the public and private sector participants who are the key stakeholders in the PPP project (43). The respondents were asked to rate, the extent of contribution of a list of CSFs gleaned from literature, in the success of a PPP housing project in the study area. The authors administered a total of four hundred (400) questionnaires. One hundred, and fifty-four questionnaires were returned indicating a reasonable response

rate of 38%. The data was analysed using structural equation model with the aid AMOS software.

Borrowing from the submission of (44) that success factors determine success and (45) that identification of success factors is key to achieving success of PPP projects, this article adopted a conceptual framework of evaluating the success of PPP projects (Fig 1).

Fig 1: A conceptual framework for evaluating PPP project success



From the review of literature, five categories of CSFs (latent constructs) each with a list of success sub-factors (indicators) are adopted for the survey (Table 2). The grouping of the factors into broad categories of CSFs shows the relationship among inter-related factors and concurs with similar categorization by (46) and (47) regarding the relevance of the CSFs. As (48) noted in their extensive literature review, these CSFs have received recognition due to the frequency of citation they received by various authors.

Table 2: critical success factors with a list of success sub-factors

Critical Success Factors	Success Sub-factors
Effective Procurement process (EPP)	Transparent procurement process (EPP1) Competitive procurement process (EPP2) Good governance (EPP3) Well-organized and committed public agency (EPP4) Trust and openness between parties (EPP5)
Appropriate risk allocation (ARA)	Equitable risk allocation in contractual agreement (ARA1) Equitable risk allocation in operational agreement (ARA2) Equitable risk allocation in loan agreement (ARA3) Equitable risk allocation in design/build contract agreement (ARA4)
Favourable investment environment (FIE)	Stable political system (FIE1) Favourable economic system (FIE2) Fair and efficient legal framework (FIE3) Availability of financial market (FIE4) Supportive and understanding community (FIE5)
Judicious Government control (JGC)	Government guarantee (JGC1) Efficient approval process (JGC2) Consistent monitoring (JGC3) Action against errant developers (JGC4)
Good Private Consortium	Technical competence (SPS1) Financial capability (SPS2) Rich experience in partnering (SPS3)

3. Analysis & Results

Two main steps in SEM involves first, confirming the validity of the indicators in measuring the latent variables and second, fitting the latent variables and indicators into the structural model to establish their relationship through path analysis (50). In SEM analysis, convergent validity and discriminant validity must also be achieved to the required level. While convergent validity measures the level of similarity among the items of a construct, discriminant validity seeks to measure the level of disparity between latent constructs. The discriminant validity is usually determined by a correlation value less than 0.90 and the average variance extraction (AVE) greater than the square of the correlation of the variables (51).

Following the steps in SEM, the internal reliability of the success sub-factors in measuring the CSFs was first measured through an exploratory factor analysis (EFA). The EFA results show that all the

latent constructs achieve internal reliability with a Cronbach's Alpha of greater than 0.700. Every measurement model involving latent constructs needs to undergo CFA before modelling into SEM. However, to avoid problems of model identification when CFA is done for every construct (52), the pooled CFA was carried out for the measurement model comprising of the five constructs namely efficient procurement process (EPP), appropriate risk allocation (ARA), favourable investment environment (FIE), judicious government control (JGC) and strong private sector (SPS).

The model statistics indicate that the initial model did not achieve a perfect fit. Accordingly, modification indices were checked to determine inconsistencies that led to bad model fit. The items EPP2, EPP5, ARA3, FIE1, JGC1, and JGC4, having exhibited low squared multiple correlations were deleted to improve goodness of model fit.

Similarly, modification indices shows that MI occurred between the error terms e13 and e11. Accordingly, the items FIE2 and FIE4, corresponding to the error terms were covaried to improve the model fitness. The final CFA model has shown that all the five constructs (EPP, ARA, FIE, JGC, and SPS) in the model have exhibited internal convergence based on the data captured for the study (Fig 2).

After the CFA model achieved goodness of fit, the model was examined to determine whether its variables achieve validity reliability measures. The results of the analysis show that sufficient validity holds because CR and AVE values are greater than 0.6 and 0.5 (52) respectively. Similarly discriminant validity holds as the correlations of variables shown in Figure 2 were below 0.85 (53, 54).

CFA was also carried out to evaluate the success of the PPP housing project as second order measurement model

comprising of the five first order unobserved constructs. As expected, the initial model, did not achieve the recommended values for GFI, AGFI, and TLI and it shows an insignificant p-value (0.000).

Figure 2: CFA model

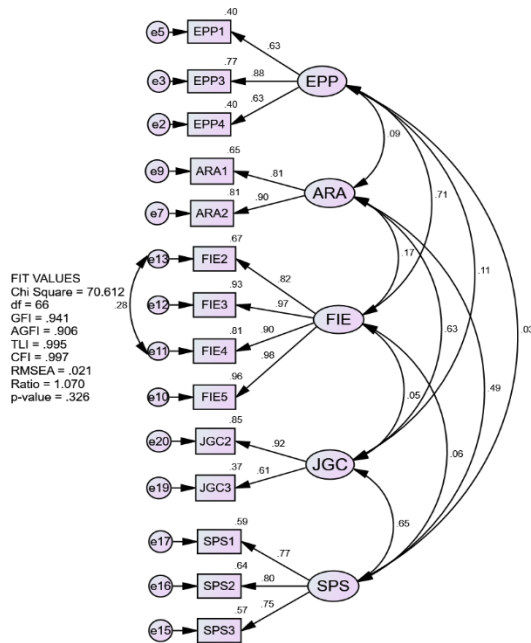
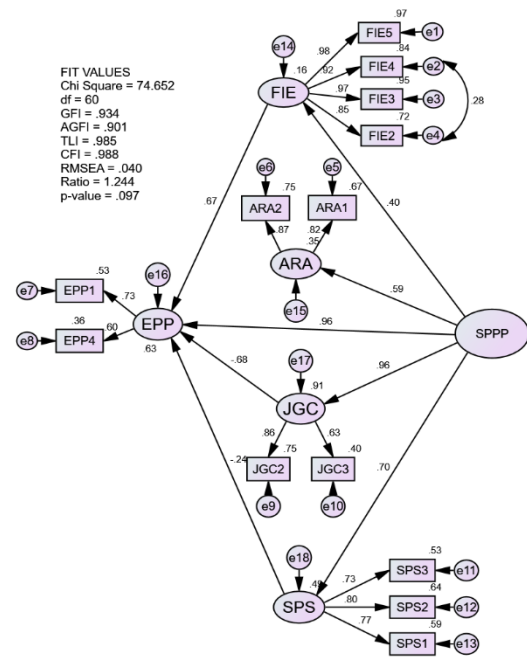


Figure 3: Final measurement model for PPP housing project success



Accordingly, the modification indices were checked to determine sources of bad fit. Modification indices (MI) occurred between e3 and e23 and the regression weight statistics show MI between FIE and EPP, JGC and EPP, SPP and EPP. Accordingly, item EPP3 (represented by error term e3) showing covariance with FIE (represented by error term e23) was deleted to achieve discriminant validity and improve model fit.

Also, the items FIE, JGC and SPS were correlated with EPP since the MI indicated a strong relationship between them. The re-specified model (Figure 3) shows significant improvement in which all the GOF indices fall within acceptable values.

4. Discussion & Conclusion

The CFA measurement model was examined to explore the contribution of the CSFs in the success of PPP project in Nigeria. The regression weights indicate the contribution of the CSFs on the success of PPP housing project in Table 3.

Table 3: The contribution of CSFs on the success of PPP Housing project

Parameter	Estimate	Lower	Upper	p
FIE <-- SPP - P	.401	.320	.476	.004
JGC <-- SPP - P	.955	.813	1.092	.004
SPS <-- SPP - P	.698	.560	.842	.004
EPP <-- SPP - P	.964	.672	1.434	.004
AR <-- SPP A - P	.593	.420	.726	.004
EPP <-- SPS -	-.245	-.631	.208	.251
EPP <-- FIE -	.675	.481	.879	.004
EPP <-- JGC -	-.678	-1.347	-.214	.011

Efficient procurement process (EPP) has the highest contribution indicating a standard deviation of 0.964 (96%) when the success of PPP project (SPPP) goes up by 1 standard deviation. On the other hand, favourable investment environment (FIE) has the lowest impact with a contribution of only 40% (0.401). The accepted (statistically fitted) model in figure 4 also indicated correlations between the CSFs (FIE, JGC, and SPS) and EPP in determining the success of the project. By implication, the model suggested that some form of mediation (indirect relationships) between the three CSFs and EPP in determining the success of the housing project. The results in Table 3 (shaded in yellow) indicates a negative but non-significant relationship between EPP and SPS (-2.45). However, the results show a significant relationship ($p < 0.05$) between EPP and FIE (0.67) but a negative correlation between JGC and EPP (-0.678).

The findings of the study revealed that the success of the PPP housing project is dictated by the complimentary influence of

the critical factors ‘efficient procurement process’, ‘judicious government control’ ‘favourable investment environment’, and ‘appropriate risk allocation’. The authors, therefore, recommend that decision makers should always consider those key determinants of success in assessing the performance of PPP projects.

The authors conclude that although a list of factors may be identified as critical, the factors do not exist in isolation but also share complimentary influence on the success of the PPP projects. Accordingly, future research agendas may wish to focus on exploring the reasons interconnection of the multiple factors that influence the success of PPP projects in different administrative settings.

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