IS BUILD-OPERATE-TRANSFER (BOT) SYSTEM AN EFFECTIVE INITIATIVE COMPARED WITH TRADITIONAL PROCUREMENT METHOD IN STUDENT HOUSING PROVISION IN AN EMERGING ECONOMY?

Job Taiwo GBADEGESIN[1] and Matthew Oluwole OYEWOLE[2]

[1]Department of Estate Management, Obafemi Awolowo University, Ile –Ife, Nigeria, Email: prgbadegesin@yahoo.com
[2]Department of Estate Management, Obafemi Awolowo University, Ile –Ife, Nigeria, Email: wolesike@yahoo.com

ABSTRACT

BOT is a scheme or private finance initiative (PFI) or alternative procurement method in which a government contractually grants to a private sector entity a concession requiring the entity to obtain financing for design, build and operate a public facility or infrastructure for a fixed period of time, during which the private entity can recover its costs of construction, plus profit, by charging fees or tools for its use and at the end of the concession period, transfer ownership and operation of the facility back to the government. This paper examines stakeholders' perception in Nigeria on the effectiveness of BOT as a private finance initiative (PFI) for student housing provision and compares it with traditional procurement method (TPM). It also determines the association between the respondents' years of experience in BOT procurement and the outcome of assessment based on the identified factor frameworks. To achieve these objectives, questionnaires were administered on a sample of the core professionals and experts who are staff in Physical Planning and Development Units (PPDU), Housing unit, Works and Maintenance sections of the selected tertiary institutions in Nigeria. Data were analyzed using descriptive statistics, Chi-square and t-test. The result indicates higher level of effectiveness in favour of BOT than TPM. It also found that, except for cost/funding, there is a significant relationship between the respondents' years of experience and other factors. It also found that there is significant difference in the respondents' assessment of BOT and TPM.

Keywords: BOT, PFI, Student Housing, TPM, Tertiary Institutions.

1.   INTRODUCTION

Recent surveys suggest that the usual delays experienced in the procurement of infrastructure and abandonment cases which arise as a result of insufficient fund necessitate the need for the adoption of PFIs towards financing housing infrastructure in Nigerian tertiary institutions of learning. Yet, the adoption of the initiative is argued to be influenced by a variant of factors which introduce elements of doubt on its relative effectiveness, compared with traditional procurement method (TPM) (Zhang, 2001; Cheung et al., 2010 and Li. et al., 2003).

Sustaining and improving on the existing infrastructure in Nigerian tertiary institutions of learning are germane to the government of the nation. As part of the effort to augment the frantic effort of government, campaign for economic deregulation, privatization and commercialization have been embraced in other to encourage private participation in both educational and economic sectors. Inadequate infrastructure is one of the challenges confronting Nigerian tertiary institutions of learning which emanates from inadequate funding. The menace of infrastructure decay stemmed from the inability to sustain and upgrade the existing facilities such as student – hostels, lecture halls, road networks, sport facilities, staff housing, administrative blocks and offices, laboratories and others. The importance of infrastructure in Nigerian tertiary   institutions today cannot be over-emphasized as efficient infrastructure   facilities act as catalysts for educational and research activities. The effects of the inadequate maintenance and renewal of equipment and facilities are visible in all subsectors, education inclusive. Against this backdrop, the need to embrace PFI becomes necessary and BOT initiative therefore is currently adopted in selected tertiary institutions in southwestern Nigeria.

Private Finance Initiative (PFI) is one of several procurement routes that situates under the general heading of Public Private Partnership (PPP). The rationale for PPP is described as the combination of the resources of the public and private sectors in the quest for more efficient service provision (Akintoye et al., 2003). This idea has been used over the past 20 -30 years by governments in developed countries to finance infrastructure projects to meet the public demand for service. Wilson et al. (2010) opined that in today turbulent "post – global financial crisis" environment, governments, at any level are confronted with an increasing demand for services but with significantly diminished revenue base.

Empirical studies have identified various routes of PFI in procuring infrastructure, among which is BOT. Some studies are concerned with public ownership and operation through public enterprises or government department, or public ownership with private sector management and operations or private ownership and private operation or community provisioning. The choice of any of the above options depends on economic, institutional and social characteristics which vary among countries. Recent trends according to Ogunlana and Dey's (2004) study in the industry indicates continuous use of alternative procurement methods to compliment traditional procurement approach.

As long as infrastructure is sine qua non to educational and research success, there is need for alternative finance strategies like BOT in the emerging economy. Budgetary constraint in the developing nation like Nigeria, has led government to seek alternative methods of financing infrastructure provision even in educational sector. However, the adoption of the initiative is argued to be influenced by a variant of factors which introduce elements of doubt on its relative effectiveness compared with traditional procurement method (TPM). Against the foregoing, the following research questions emanate:

- What is the status of respondents' experience on project procurement?
- What is the perception of stakeholders on the effectiveness of BOT mechanism when compared with TPM within the pace of time it operates in the selected tertiary institutions in southwestern Nigeria?
- Do the years of experience in PPP/BOT have influence on the respondent's assessment status of BOT and TPM?
- Is there any significant difference between the respondents' assessment status of BOT and TPM?

Hence, this study therefore examines the stakeholders' perception on the level of effectiveness of BOT as a private finance initiative/ alternative procurement method, compared with TPM. It also determines the influence of respondents' years of experience in PPP/BOT procurement and the outcome of assessment based on the identified factor frameworks. It further compares the respondents' assessment status of BOT and TPM system in housing infrastructure. The last two objectives generate two null hypotheses:

- **Ho:** Respondents' years of experience in PPP/BOT procurement methods have no significant influence on their assessment.
- **Ho:** There is no significant difference in the respondents' assessment of BOT and TPM systems based on each of the factor frameworks.

2. LITERATURE REVIEW

2.1 BOT Project Procurement

The concept of BOT is examined by Morris (1994) as a scheme more applicable to projects which are primarily infrastructure projects. It is a system in which private promoters instead of public sectors finance, build and operate a facility for a fixed period. The private promoters obtain their profit not from being paid for the work, but from the revenue stream obtained by charging the public a 'toll' for using the facility. The author identified two important reasons for BOT; a growing trend towards replacing public sector financing with private sector, and encouragement of the principal participants to concentrate on its overall business success.

In the study conducted by Shalakany (1996) which was supported by Askar and Gab-Allah (2002) revealed major reasons for private sectors' participation through BOT among which are; the need of the government to get the project, unwillingness of the government to finance infrastructure project, willingness of the government to share risk in such projects, availability of offering finance from lending institutions and investors.

The model and arrangement in BOT is well described in literature: Kumaraswamy et al., (2002); Concession company providing the finance, design, construction, operation and maintenance of all privatized infrastructure projects for a fixed period. Zhang (2001); a structure that uses private investment to undertake infrastructural development for public sector. Shalakany (1996); a concession by the government to provide a promoter known as concessionaire who is responsible for the financing, construction, operation and maintenance of a facility over the concession period. Navarro (2005); a contractual arrangement and a new legal concept to encourage private enterprises and entrepreneurs to help the government in its development effort. Tiong (1990), Haley (1992); phases of development such as pre-investment, pre-construction, construction, operation and transfer which involve consultants, project sponsors, contractors and equity holders.

BOT has also been viewed to incorporate some downsides. Kumaraswamy et al., (2002) researched that BOT is neither well possible nor advisable in all civil engineering mega-projects, yet provides an excellent vehicle to reverse the over fragmentation of functions that has led to development agendas of the multiple participants. In the opinion of Tiong (1990), conflicts of interest might work against the success of the scheme especially when it comes to the issues of environmental impacts or the availability to disadvantaged segments of the community of low or no-cost access to such facilities or infrastructure. Askar and Gab – Allah (2002) opined that risks manifest in various stage of BOT arrangement; off-take arrangement which entails the uncertainty of total product distribution, supply arrangement, environmental law, technical problems, domestic political events and high development cost. In the study conducted by Wang et al.(2000), Ogunlana and Dey (2004), Kumaraswamy et al. (2002), various risk associated with BOT system are identified: such as political risk, construction risk, operation risk, financial risk, market and revenue risk. This study hence compares the initiative-BOT to traditional procurement method (TPM) using some variables identified in literature.

2.2 Traditional Procurement Methods (TPM)

Traditional infrastructure procurement represents the acquisition by government of infrastructure such as roads and buildings (i.e. hospital buildings, school buildings) (Burger and Hawkesworth (2011). It is called traditional because it has been in existence for a long time and has been the only choice available for most years. Onwusunye (2002) describes traditional method as a multiplex contractor) usually outsourced using competition bidding, agreed price.

According to Ojo and Gbadebo (2012), this procurement method usually involves relationship between a public or private organization. The sole responsibility for financing of the project lies on the client's organization. However, independent multi-discipline consultants on behalf of the client organization undertake the management of the project to completion. Burger and Hawkesworth (2011) posit that in traditional procurement system, the governments specifies the quantity and quality of the service, while the infrastructure is constructed by private companies to whom the construction is typically awarded through tender. At the completion, the asset is delivered to and operated by the government. OECD (2008) opined that in a traditionally procured project, the transfer of risk to the private parties involved is very limited and usually does not extend beyond the construction phase of the project.

JCT (2008) posits that TPM is characterized by the separation of services-design and full documentation required before the award and construction commences by the contractor. The method at this juncture has been criticized because of burden of bureaucracies and poor contract management. Mathonsi and Thwala's, (2012) study indicates that TPM entails client entering into an agreement with the design consultant to actually carry out the design work and prepare contract documents.

TPM incorporates tender invitation either selective tendering which requires client submitting the lists of contracts adjudged qualified based on technical competence and profiles or open tendering which entails an interested contractor to submit a tender for the work placed on public advertisement or tendering through negotiation whereby a single contractor is invited for a special or specific project (Pilcher, 1992). Ojo and Gbadebo (2012) confirmed that TPM has been a standard practice in the building industry for long years, and it is still widely used for range of situations and condition, despite the advent of new initiatives of PPP in the emerging economies.

2.3 Comparing BOT and TPM

Comptroller and Auditor General (2003) indicated that under the private finance initiative (PFI) the performance of projects in terms of completion of work within time and budget is a considerable improvement when compared to projects procured in a traditional manner. TPM is known to be the usual approach asides the idea of PPP. BOT has emerged to serve as an infrastructural arrangement scheme. Algarni et al. (2007) reported that the Build –Operate – Transfer (BOT) delivery system has gained world- wide popularity as a mechanism to limit spending on government budgets and facilitate private financing of desirable public facility projects. The adoption of BOT initiative is argued to be influenced by a variant of factors which introduced elements of doubt on its relative effectiveness compared with traditional procurement method (TPM).

These factors include; duration /timing of project, cost/budget factors, accountability factors, economic factors, environmental factors, political factors, client factors and nature of projects factors. It is also important to state that these factors are rooted in the studies conducted by Zhang (2005) on financial risk factors, Li (2003); Time, project innovation, economic development, completion, technology etc, Cheung et al.(2010); duration, cost, budget, risk, economic, environment etc, Mathonsi and Thwala (2012); project risk, political consideration, client level of knowledge, economic factor, due diligence, project, competition and technology, Ojo and Gbadebo (2006);Project management, technicality, risk management and policy. The assessment is therefore based on the adapted identified factors in Table I.

Table I: Summary of the Factors Framework that gauge the Performance and Selection Criteria of BOT and TPM as identified from Literature.

Authors	Summarized Factors	Procurement Subject Issues	Adapted and Validated Factors/Criteria(Appendix A)
Li (2003), Cheung e tal.(2010)	Duration/timing,competition, cost/financing, budget, risk distribution, project innovation,Economic development, technology etc.	PPPs large project in Hong Kong, Australia and UK	-Construction duration, cost/funding, -Clients' satisfaction, -Risk distribution, -Nature of project, -Political influence and policy -Accountability.due process -Economic and environmental compliance
Mathonsi and Thwala (2012); Ojo and Gbadebo (2012); Maison e t al.(2006)	Duration, cost/budget, political consideration, economic condition, emerging technology, government policy, nature of projects, level of knowledge, risk. etc.	Criteria for procurement strategy for project delivery in Nigeria.	
De Marco e tal.(2012), Graham (2011)	Time taken to award contract, deliver the asset, transaction costs, cost certainty, whole of life maintenance, budget certainty, project due diligence, environmental approvals, performance	Assessment of PPP and Traditional Procurement Methods	

	requirement, regulatory quality, country index, currency exchange rate and partnership		

Source: Authors' Literature Search

3.   METHODOLOGY

3.1 Questionnaire Design Technique, Data Validation and Reliability Test

To achieve the objectives of this study, factors that measure the performance and selection criteria of procurement systems identified from literature were adapted as indicated in Table I. The variables were developed on 4-point Likert scale-(Very effective to not effective) under each framework to generate a procurement checklist. The instrument-Procurement Checklist (Appendix A) were administered on seventy five respondents, sampled at the initial pilot survey, twenty five questionnaires for each of the three surveyed institutions. The sample technique was chosen because the time taken for conducting the survey is lessened and the response rate is reasonably high.

The internal consistency test of all the 28 factors indicated in the procurement checklist-Appendix A provides a cronbach alpha of 0.886.The individual factor of the instrument indicates the following results:

Table II: Validity and Reliability Test

Factors	No of sub-factors	Cronbach's Alpha(Reliability Test)
Duration/Timing	3	0.660
Cost/Financing	4	0.790
Nature of Project	5	0.801
Accountability/Due Process	3	0.644
Economic/Environmental Compliance	5	0.781
Political Influence/Policy	3	0.718
Client Satisfaction	4	0.763

Source: Authors' Statistical Analysis Result (2013)

The foregoing results provide a sufficient and strong reliability test on the data collected through project procurement checklist.

3.2 Data Description and Empirical Analysis

Out of seventy five questionnaires administered, 59 completed sets were received useful, given a response rate of 79%. Table III presents the descriptive analysis of the respondents' demographics.

Table III: Demographic Characteristics of the Respondents

Variables	Status	Frequency (f)	Percentage (%)
Sex	Male	56	94.9
	Female	1	1.7
	No Response	2	3.4
	Total	59	100.0
Age	20-30 years	12	20.3
	31-40 years	18	30.5
	41-50 years	25	42.4
	Above 50 years	2	3.4
	No Response	2	3.4
	Total	59	100.0
Academic Qualification	Diploma/Certificate	7	11.9
	HND/Bachelor of science	42	71.2
	Master	5	8.5
	Ph.D.	2	3.4
	No Response	3	5.1
	Total	59	100.0
Years of Experience	1-10 years	4	6.8
	11-20 years	39	66.1
	21-30 years	10	16.9
	Over 30 years	3	5.1
	No Response	3	5.1
	Total	59	100.0

Source: Authors' Field Survey (2013)

3.3 Gender and Age

Table III indicates that 56 (94.9%) of the respondents are male and 1 (1.7%) is female. Out of them 25 (42.4%) are within the age of 41-45, 18 (30.5%) are within the age bracket of 31-35 and 12 (20.3%) are within the age of 20-30 years old. These imply that the data collected are from mature respondents who are well disposed to provide reliable information in respect of the empirical study.

3.4 Academic Qualification and Professional Status

Table III also indicates that 42 (71.2%) possess either HND or B.Sc, 5 (8.5%) possess masters degree, 7 (11.9%) possess Diploma/certificate and 2 (3.4%) possess PhD .The foregoing information imply that response on this study emanate from reliable source who are well disposed in age with requisite academic qualifications.

3.5   Years of Experience

It is also shown in Table III that the respondents possess substantial years of experience with 39 (66.1%) within 11-20 years of service, 10 (16.9%) within 21-30 years of experience.

To investigate the level of experience in project procurement, Table IV presents the result.

Table IV: Level of experience in project procurement

Experience in project procurement	Frequency (f)	Percent (%)
Very High	11	18.6
High	16	27.1
Satisfactory	25	42.4
Low	7	11.9
Total	59	100.0

Source: Authors' Field Survey (2013)

Table IV shows the levels of personal experience of the respondents in project procurement and it can be seen from the table that 11(18.6%) of the respondents had a very high level of experience in project procurement, 16 (27.1%) indicated that they had a high level of experience, 25 (42.4%) described it as satisfactory while 7 (11.9%) had low experience in project procurement. This implies that the respondents possess substantial years of experience in project procurement which qualifies them suitable respondents for the study

To examine the level of effectiveness based on the identified components of factor framework on BOT and TPM in the provision of housing infrastructure in tertiary institutions, responses to each component of factor framework in the instrument (Appendix A) were scored and subjected to descriptive analysis. Their respective mean and standard deviation were therefore obtained. Items 8 to 10 represent "duration/timing factor", items 11 to 14 represent "cost/financing factor", items 15 to 19 represent "the nature of project factor", items 20 to 22 represent "accountability/due process factor" items 23 to 27 represent "economic/environment compliance factor" items 28 to 30 represent "political influence/policy factor" and items 31 to 34 represent "client knowledge /risk distribution factor". This is similar to the studies conducted by Li (2003), Cheung e tal. (2010), Mathonsi and Thwala (2012); Ojo and Gbadebo (2012); Maison e t al. (2006), De Marco e tal. (2012), Schaufelberger and Wipadapisut (2003) and Graham (2011), on traditional and alternative procurement approaches and criteria. The summary of the result is presented in Table V:

Table V: Effectiveness of BOT and TPM in Student Housing Infrastructure Procurement in Tertiary Institutions.

CODE	Procurement Methods	BOT (PPP)		TPM		Rank
	Factors/Scaling					
		MEAN	SD	MEAN	SD	
C8	Time taken to negotiate/award contract.	3.66	0.58	2.00	0.59	2
C9	Time taken to deliver the asset	3.53	0.50	1.95	0.61	8
C10	Time taken to organize for finance.	3.63	0.49	1.81	0.66	3
C11	Cheaper Transaction cost	3.58	0.50	1.73	0.69	6
C12	Cost certainty	3.58	0.53	1.71	0.70	6
C13	Funding arrangement	3.47	0.50	1.95	0.71	10
C14	Budget Certainty	3.51	0.54	2.00	0.67	9
C15	Whole of life maintenance	3.32	0.68	1.97	0.61	17
C16	Design innovation	3.22	0.74	1.86	0.66	20
C17	Construction innovation	3.31	0.73	1.75	0.63	18
C18	Size & Technical Complexity of the project.	3.40	0.56	1.83	0.62	15
C19	Flexibility of the design.	3.25	0.51	1.86	0.60	19
C20	Due diligence	3.19	0.51	1.86	0.69	21
C21	Due process	3.43	0.60	1.60	0.78	13
C22	Relative level of accountability/ Transparency	3.58	0.50	1.59	0.77	6
C23	Availability of resources	3.56	0.53	1.56	0.70	7
C24	Competition	3.39	0.56	1.69	0.68	16
C25	Market/economic Compliance	3.46	0.54	1.75	0.68	11
C26	Environmental approval	3.61	0.56	1.78	0.65	5
C27	Change in performance requirement	3.61	0.59	1.88	0.56	5
C28	Positive Political influence	4.07	3.88	1.92	0.57	1
C29	Political support	3.42	0.53	1.76	0.66	14
C30	Affirmative action/policies	3.42	0.56	1.89	0.63	14
C31	Familiarity of procurement system	3.51	0.54	1.62	0.71	9
C32	Client's specific requirement	3.62	0.52	1.77	0.64	4
C33	Risk allocation/ reduction	3.45	0.54	1.62	0.69	12
C34	Client's level of knowledge.	3.40	0.56	1.81	0.62	15

Table V indicates that BOT has more relative advantages than TPM considering the mean value and standard deviation of individual component of factor framework on BOT and TPM in the procurement of student housing in the tertiary institutions.

On timing/duration factor, the mean value for BOT is 3.66 and that of TPM is 2.00 as the time taken to negotiate/award contract. The mean value on the time taken to deliver the project in BOT is 3.53 and that of TPM is 1.95. The mean value on the time taken to organize for finance in BOT is 3.63 and that of TPM is 1.81.

Under cost/finance factor, the mean value for transaction cost in BOT is 3.58 and that of TPM is 1.73. The mean value on cost certainty in BOT is 3.58 and that of TPM is 1.71. The mean value on funding arrangement in BOT is 3.47 and that of TPM is 1.95. The mean value on budget certainty in BOT is 3.51 and that of TPM is 2.00. For the nature of project, the mean value for whole of life maintenance in BOT is 3.32 and that of TPM is 1.97.The mean value for design innovation in BOT is 3.22 and that of TPM is 1.86. The mean value for construction innovation in BOT is 3.31 and that of TPM is 1.75. The mean value for size & technical complexity of the project in BOT is 3.40 and that of TPM is 1.83 and the mean value for flexibility of the design in BOT is 3.25 and that of TPM is 1.86.

On accountability/due process, the mean value for due diligence in BOT is 3.19 and that of TPM is 1.86. The mean value for due process in BOT is 3.43 and that of TPM is 1.60. The mean value for relative level of accountability/ transparency in BOT is 3.58 and that of TPM is 1.59.

For economic/environment compliance, the mean value for availability of resources in BOT is 3.56 and that of TPM is 1.56. The mean value for competition in BOT is 3.39 and that of TPM is 1.69. The mean value for market/economic compliance in BOT is 3.46 and that of TPM is 1.75. The mean value for environmental approval in BOT is 3.61 and that of TPM is 1.78. The mean value for change in performance requirement in BOT is 3.61 and that of TPM is 1.88.

Under political influence/policy, the mean value for positive political influence in BOT is 4.07 and that of TPM is 1.92. The mean value for political support in BOT is 3.42 and that of TPM is 1.76. The mean value for affirmative action/policies in BOT is 3.42 and that of TPM is 1.89. Finally, for client knowledge/risk distribution, the mean value for familiarity of procurement system in BOT is 3.51 and that of TPM is 1.62. The mean value for client's specific requirement in BOT is 3.62 and that of TPM is 1.77. The mean value for risk allocation/ reduction in BOT is 3.45 and that of TPM is 1.62. The mean value for client's level of knowledge in BOT is 3.40 and that of TPM is 1.81.

The results of the whole analysis indicate that the identified factor frameworks were considered to be more relevant and beneficial in BOT than TPM. Political influence/ policy produces component with highest mean rating, similar in content to the studies by Zhang (2001), Cheung et al. (2010) and Li. et al.(2003) while investigating the positive and negative attraction of BOT suitability for public projects.

To determine the influence of years of experience on the respondents' assessment of BOT procurement method, constituting items were scored and the respective mean and standard deviation are determined, for each of the category.

Any score below the mean value was considered as "not effective", scores of mean value plus one standard deviation is considered as "fairly effective" while mean plus two standard deviation is considered as "very effective". The assessment factors framework such as duration/ timing, cost/financing, nature of the project, accountability/due process, economic/environment compliance, political influence/policy and client satisfaction/risk distribution were subjected to a chi-square analysis. The results are presented in Table VI:

Table VI: Chi-square analysis of influence of respondent's years of experience on PPP/BOT procurement methods based on factors identified.

S/N	Factors	Years of Experience		
		df	χ^2	p
1	Duration/time factors framework	19,679	6	.003
2	Cost/financing factors	11.101	6	.085
3	Nature of the project	21.229	6	.002
4	Accountability/due process	30.249	6	.000
5	Economic/environment compliance	18.226	6	.006
6	Political influence/policy	22.715	6	.001
7	Client satisfaction/risk distribution	12.795	6	.046

Source: Authors' Field Survey (2013)

Table VI shows that for "duration/time" the Chi square value obtained is 19.679, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected. This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have significant influence on the assessment of duration/time factor framework. This implies there is a significant relationship between the respondents' years of experience and their perception the 'duration/timing" factor of BOT projects

On "cost/finance factor", it shows that the Chi square value obtained is 11.101, df =6, p > .05). Since p- value is greater than 0.05 threshold, the stated null hypothesis is upheld. This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have no significant influence on the assessment of cost/financing factor framework.

Chi square value obtained on "the nature of project" is 21.229, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected. This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have significant influence on their assessment of the nature of the project factors framework.

The Chi square value obtained on "accountability/due process" is 30.249, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected.

This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have significant influence on their assessment of accountability/due process factors framework.

The Chi square value obtained for "economic/environmental compliance" is 18.226, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected. This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have significant influence on the assessment of economic/environment compliance factors framework.

The Chi square value obtained for "political/policy factor" is 22.715, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected. This result therefore concludes that respondent's years of experience in PPP/BOT procurement methods have significant influence on their assessment of political influence/policy factors framework.

The Chi square value obtained for "client satisfaction/risk distribution" is 12.795, df =6, p < .05). Since p- value is less than 0.05, the stated null hypothesis is rejected. This result therefore concludes that respondents' years of experience in PPP/BOT procurement methods have significant influence on the assessment of client satisfaction/risk distribution factors framework. To compare the respondents' assessment of BOT and TPM systems, respondents' assessment of BOT and TPM systems based on each of the factor framework were subjected to *t-test of significance*.

Table VII: Test of significant different in the assessment of BOT and TPM system (*t-test*)

Assessment of BOT&TPM	Mean	N	Std. Deviation	t	df	p
duration/time(BOT)	10.7627	59	1.35620			
duration/time(TPM)	5.6271	59	1.85601	19.601	58	.000
Cost/financing (BOT)	14.1356	59	1.62372			
Cost/financing (TPM)	7.3898	59	2.41416	18.661	58	.000
Nature of Project(BOT)	16.2712	59	2.80904			
Nature of Project(TPM)	9.2712	59	2.55849	15.368	58	.000
Accountability/Due process (BOT)	10.0847	59	1.46556			
Accountability/Due process (TPM)	4.8983	59	2.15515	16.935	58	.000
Economic/Environment compliance(BOT)	17.6271	59	2.02483			
Economic/Environment compliance(TPM)	8.6610	59	2.63668	20.479	58	.000
Political influence/policy(BOT)	10.4068	59	1.35339			

Assessment of BOT&TPM	Mean	N	Std. Deviation	t	df	p
duration/time(BOT)	10.7627	59	1.35620			
duration/time(TPM)	5.6271	59	1.85601	19.601	58	.000
Political influence/policy(TPM	5.3729	59	1.59631	17.990	58	.000
Client satisfaction/Risk distribution(BOT)	13.7966	59	2.03232	15.677	58	.000
Client satisfaction/Risk distribution(BOT)	6.1356	59	3.03120			

Source: Authors' Field Survey (2013).

Table VII shows that the respondents' mean scores for BOT are generally higher than those of TPM for all factors. With t-values results at p- values which are less than 0.05, with 58 as the degree of freedom, the stated null hypothesis is rejected. These results conclude that there is significant difference in the respondents' assessment of BOT and TPM systems based on all factor frameworks. The results indicate a further confirmation of the analysis in table v similar to the studies conducted by De Marco e tal. (2012) and Graham (2011) which uphold that with the variants of factors, performance of alternative procurement methods and TPM behave differently.

4.   SUMMARY OF FINDINGS AND DISCUSSION

In this study, four objectives are examined: First, it investigated the level of experience in project procurement. Second, it examined the respondents' perception on effectiveness of BOT and TPM in procuring student housing infrastructure, based on the identified framework from literature. Third, it determined the influence of respondents' years of experience in PPP/BOT procurement using chi-square, based on the identified factors. Lastly, it compared respondents' assessment of BOT and TPM system using t- test.

Consequently, the study revealed that majority of the respondents possess a high level of experience in project procurement. It is confirmed that BOT has relative advantages than TPM using all identified factors which include duration, cost/financing, nature of project, accountability, political influence, client satisfaction and risk distribution, economic and environmental compliance. It is further confirmed that apart from cost/financing, there is significant relationship between the respondents' years of experience and project duration, accountability, economic/environmental compliance, nature of project, client satisfaction and risk distribution. Finally, the respondents' mean scores for BOT are generally higher than those of TPM for all factors. With t-values results at p- values which are less than 0.05, with 58 as the degree of freedom, it can be concluded that there is significant difference in the respondents' assessment of BOT and TPM.

5.   PRACTICAL IMPLICATION AND RECOMMENDATION

This study serves as one of the few studies that compare BOT initiative and TPM on student housing which emerges from a developing economy which attempts to investigate the effectiveness of the initiative within the context of Nigeria educational sector for housing infrastructure. Findings from this study would provide blue prints for effective decision making on student housing delivery in tertiary institutions globally. It also suggests a viable alternative route towards housing delivery and an investment opportunity for international investors in student housing in an emerging economy.

It is therefore recommended that BOT should be embraced as a viable alternative route to procure student housing which is usually inadequate in most tertiary institutions of learning in emerging economies. Based on the findings from the study, it is also recommended that while adopting BOT approach, the stakeholders and committees on BOT within the tertiary institutions should work to address the discrepancies which manifest in the aspect of costing /financing of BOT. The frontier of knowledge in BOT and procurement method should be extended and tested against other infrastructural projects.

6.   ACKNOWLEDGEMENT

7.   REFERENCES

Akintoye, A., Beck, M. and Hardcastle, C. (2003). Public-private partnerships: Managing risk and opportunities, Blackwell Science, Oxford

Algarni, A. M., Arditi, D. and Polat, G. (2007). Build Operate Transfer in infrastructural projects in the United State. Journal of Construction Engineering and Management. 133 (10), Pp 728 – 735.

Askar, M.M. and Gab – Allah, A .A (2002). Problem facing parties involved in Build Operate and Transfer project in Egypt. Journal of Management in Engineering, Vol 18, No 4.

Burger, P. and Hawkesworth, I. (2011). How to attain Value for Money: Comparing PPP and traditional infrastructure public procurement .OECD Journal on Budgeting. Volume 1.

Cheung, E., Chan, A.P. and Kajewski, S. (2010). Suitability of procuring large public works by PPP in Hong Kong. Engineering, Construction and Architectural Management, Vol.17 Iss: 3 pp.292-308.

Comptroller and Auditor General (2003), PFI: Construction performance. Report by the comptroller and auditor general, HC 371 Session 2002-2003: 5 February 2003, London. enquiries@nao.gsi.gov.uk

De Marco, A., Mangano, G. Zou, X. (2012). Factors influencing the equity share of Built - Operate – Transfers, Built Environment Project and Asset Management, Vol 2. Iss. 1 Pp.5-5

Graham, D. (2011).Value for money in PPP procurement. New South Wales Treasury.

Haley, G. (1992). Private finance for transportation and infrastructure projects: a View International Journal of Project Management.Vol.10 No 2.

Kumaraswamy, M.M. and Zheng, X. Q. (2001). Governmental roles in BOT – led infrastructure development" International Journal of Project Management 19(4), Pp195 – 205

JCT (2008). Deciding on the appropriate JCT contract-practice Note.www.jctcontracts.com

Li, B. (2003). Risk management of construction public private partnership project, PhD thesis, Glasgow Caledonian University, Glasgow.

Morris, P. (1994). The management of projects, Thomas Tetford.

Mathonsi, M.D. and Thwala, W.D. (2012). Factors influencing the selection of procurement systems in the South African construction industry. African Journal of Business Management vol.6 (10), pp.3583-3594.

Maison H., Melissa, C.Y., Ng Sock H., Shim Mong H., Tay Lee Y. (2006).Factors influencing the selecting of procurement systems by clients. Proceeding of International Conference on Construction on Construction Industry, Padang, Indonesia, 21st June-25th June PAGE 1-10

OECD (2008). Public private partnerships: In pursuit of risk sharing and value for money, OECD Publishing, Paris.

Ogunlana, S.O. and Dey, P. K. (2004). Selection and application of risk management tools and techniques for Build –Operate – Transfer project. Industrial Management and Data Systems. Vol. 104 Iss. 4, PP. 334- 346.

Ojo, A.E. and Gbadebo, M.A. (2012). Critical selection criteria for appropriate procurement strategy for project delivery in Nigeria. Journal of Emerging Trends in Economics and Management Sciences.3 (5); 422-428

Onwusonye, S.I.J. (2005). The significance of informal sector in project procurement methods in enhancing project finance from the money and capital markets, The Quantity Surveyor, NIQS 54 (31-39)

Pilcher, R. (1992). Principles of Construction Management (3rd edition).McGraw-Hill Book Company, England.

Shalakany, A. (1996). The legal framework of BOT project under Egyptian law procurement conference on international contracts of BOT and their amicable solution Vol. 3.

Schaufelberger, J.E. and Wipadapisut, I. (2003). Alternative financing strategies for Build – Operate – Transfer project. Journal of Construction Engineering and Management, 129(2), Pp 205 – 213.

Tiong, R.L.K (1990). BOT projects. Risks and securities. Construction Management and Economics, PP. 315 - 328.

Navarro, A. (2005), "Build – Operate – Transfer (BOT) Arrangements: The Experience and Policy Challenges" Discussion Paper Series No. 2005-9.

Wang, S.Q., Tiong, R.L.K., Ting, S.K., and Ashley, D., (2000). Foreign exchange and revenue risks: Analysis of key contract clauses in China's BOT Projects. Construction Management and Economics, 18 (3), pp.311-320

Wilson, D.I., Pelham, N. and Duffield, C.F. (2010). A review of Australian PPP Governance Structures Journal of Financial Management of Property and Construction.Vol.15, No.3.pp.198-215.

Zhang, X. (2005). Financial viability analysis and capital structure optimization in privatized public infrastructure projects. Journal of Construction Engineering and Management, 131(6), Pp. 656 – 668.

Zhang, X.Q. (2001). Procurement of Privately financed Infrastructure Projects, PhD Thesis. The University of Hong Kong.