ASSESSING THE INFLUENCE OF PROCUREMENT SYSTEMS ON PERFORMANCE OF CONSTRUCTION PROJECTS IN NIGERIA

Olaleye Yetunde Olanike, Mairami Maryam Baba and Abdu Bilkisu Ahmad
Department of Quantity Surveying, College of Environmental Studies, Kaduna Polytechnic, Nigeria

Abstract: Every client at the beginning of any project aims at having value for the money spent via a quality structure delivered on time and within budget by the contractor. However, researchers have shown that in most cases this aim is not met one of the reasons highlighted is wrong choice of procurement method. This study aims at establishing the procurement system that yields optimum performance in construction projects. This was achieved by identifying the types of procurement systems adopted in construction projects and establishing the relationship that exist between the procurement systems and performance. A structured questionnaire was administered to consultants on construction projects. 358 questionnaires were administered and 207 were correctly completed and returned. Quantitative Data analysis was carried out using descriptive statistics and inferential statistics. The result revealed that the traditional system procurement is the most adopted option in project execution with a grand mean of 4.22. The result of the inferential statistics shows that Traditional procurement system yields the optimum performance. The study finally recommends that consultants and other stakeholders in the construction industry and particularly those in the building sector should be up to date in the procurement process as to be able to suitably advise clients when it comes to building procurement, and that before choosing a procurement system the main objective and even supporting objectives should be established.
Keywords: Construction, procurement, procurement systems, performance

Introduction

Chan (2011) defined procurement systems as the system that represents the organizational structure adopted by clients for the implementation of project processes and eventual operation of the project. On the other hand, Molenaar *et al.* (2012), defined procurement system as a comprehensive process by which designers, constructors, and various consultants provide services for design and construction to deliver a complete project to the client. Construction project is referred to as organized process of constructing, renovating, refurbishing etc. a structure, a building or infrastructure (Ali *et al.*, 2010). The project process typically starts with an overarching requirement which is developed through the creation of a brief, feasibility studies, option studies and construction.

Eriksson and Westerberg (2012) indicate important procurement related factors considered at the design stage as bid invitation, bid evaluation, sub-contracting selection, compensation factors and performance evaluation which were termed collaborative procurement systems were found to have impacts on project performance. In any given project performance is highly influenced by the type of procurement system used to deliver the project. Consequently, project clients often seek to select the best method that can help to achieve better project results. In many countries the construction industry has, however, attracted criticism for inefficiencies in outcomes such as time and cost overruns, low productivity, poor quality and inadequate customer satisfaction (Chan & Chan2011). Practitioners, researchers and society at large have, therefore, called for a change in attitudes, behavior and procedures in order to increase the chances for construction projects to be successful and result in improved end products (Love *et al.*, 2010).

Studies have confirmed the use of various types of procurement methods for project delivery in Nigeria. Dada (2012) confirmed the use of traditional, design and build, project management, construction management, labour-only, direct labour and other types such as alliancing, partnering and joint ventures procurements in the Nigerian construction industry. The use of these procurement methods can significantly affect the performance of most projects (Ogunsanmi *et al.*, 2012). Several studies have also indicated that procurement systems have effects on construction project performance. Odeyinka and Yusuf (2011), Delay in project execution is a major problem in the Nigerian Construction industry. This occurs both in small and large projects. According to Ojo *et al.* (2014), majority of the project executed over the years in Nigeria are characterized with problem of delay in delivery. Delay can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination (Okuwoga, 2011). The issue of procurement method and its influence on performance has triggered a lot of debate in recent years (Pooe *et al.*, 2015). Grimm *et al.* (2016) contended that very little research has so far been conducted on how procurement methods can improve performance in developing countries. The efficient procurement of construction work through choice of the most appropriate procurement system has been recognized as a major determinant successful project performance (Benett & Grice, 2012). Thus, this study seeks to investigate the impact of procurement systems on construction project performance in Nigeria. This was achieved by examining procurement systems adopted in Nigeria and establishing the procurement system that will yield optimum performance in Nigerian construction projects.

Procurement Systems have become an important issue in the construction industry for two reasons. Firstly, the procurement of construction projects involves a series of processes that are interrelated and sequential (Masterman, 2010). The effectiveness and efficiency of the processes have considerable impact on the success or failure of projects. Secondly, there are several procurement methods that are available for a developer to adopt in procuring a project. For this reason, one major challenge that the project developer faces is the method to adopt among the available procurement options (Ogunsanmi & Bamidele, 2012).

Procurement Systems

Seven procurement systems, i.e. traditional procurement system, design and build, package deal, turnkey projects, develop and construct and construction management were identified from literature and discussed below:

Traditional system/separated: In this approach, the client commissions an architect to take a brief, produce design and construction information, write tenders and administer the

project during the construction period and settle the final account. If the building owners are other than small, the architect is traditionally the first point of client count act; he advised the client to appoint consultants such as quantity surveyors, structural engineers and building services engineers (Peter *et al.*, 2010).

Design and build: The term "Design and Build" refers to the procurement strategy that entails the contractor carrying out the work, the design works as well as the construction and completion of the work. This approach gives the client a single point of contract. However, the client commits to the cost of construction, as well as the cost of design, much earlier than the traditional approach (Reichstein *et al.*, 2013).

Package deal: It is commonly called the "all in" contracting is a type of procurement method where a contractor is given the responsibility for everything that is required and necessary for the design, construction and delivery of the project brief, sketch and final working drawings, getting all the approval from authorities, project financing, construction, furnishing and commissioning of all equipment and accessories and handing over the project to the client (Rowlingson, 2013).

Turnkey contract: Is an American term for "all in" or package contract. Under this arrangement, a contractor is commissioned to undertake the responsibilities for everything necessary and required for the construction, completion, commissioning and hand over the project. The word "turnkey" means that, upon completion, the client is given the key and he can then enter the project by "tuning the key" (Ashworth & Hogg, 2010).

Develop and construct is another of the integrated procurement approach which is very much similar to design and build. In this case, the contractor is still given the responsibility for both the design and construction of the project. The difference is that, under this method the client's design consultants prepare the concept sketches or designs and passed them to the contractor who will develop them and produced the detailed working drawings. The contractor will then construct and complete the project based on what it has developed and produced (Thwala & Mathonsi, 2012)

Management contracting: This is a system whereby a main contractor is appointed, either by negotiation or in competition, and works closely with the team of professionals. In a management contract, the permanent works are constructed under a series of construction contracts placed by the management contractor after approval by the client. All physical construction is undertaken by sub-contractors selected in competitive bidding. This system usually has the main contractor called the management contractor who provides the management expertise in the construction of the project for a fee (Oladinrin *et al.*, 2013).

Construction management: Construction management is that group of services over and above the normal Architectural and Engineering services related to the construction programme executed during the pre-design, design and construction phases, that contribute to the control time, cost and quality of new facility. Professional construction management treats the project planning, design, and construction phases as integrated tasks. Construction Management is a fee-based arrangement in which the construction manager is responsible exclusively to the owner and acts in the owner's interest at every stage of the project (Molenaar *et al.*, 2012).

Performance
Stakeholders in construction projects always aim to achieve successful outcome of any project. Traditionally, researchers and organizations have focused on the three project performance criteria of cost, time, and quality (Ashworth & Hogg, 2012; Chan and Chan, 2011; Swan and Khalfan, 2013).

Cost performance
Cost Performance is how well costs were kept under control i.e. did they go over budget or were they under budget (Bubshait and Almohawis, 2011). Salter and Torbett (2013) highlighted cost performance among the major consideration throughout the project management life cycle and can be regarded as one of the most important parameters of a project and the driving force of project success. And also measured the value of the work completed compared to the actual cost spent on the project. It can be measured in terms of unit cost, percentage of net variation over final cost (Chan & Chan, 2014). Cost performance is a measure of the financial effectiveness and efficiency of a project. It promotes the completion of a project within the estimated budget (Swan and Khalfan, 2013).

Time performance
The increasing importance of time in our globalized society has affected the construction industry in form of shortened project schedules. Project duration is simply the number of days/weeks/months from start to completion of the project. Since time can be a critical issue for many clients, project duration is often of prime interest. However, schedule overruns may be an even more important issue. Completing projects in a predictable manner on time (within schedule) is an important indicator of projects success and the construction industry is frequently criticized for project delays (Alhazmi and McCaffer, 2010; Swan and Khalfan, 2013). Schedule overruns (sometimes labeled time growth) are often very negative since they hinder the client to start using the end product as planned.

Quality: In the construction industry, quality is defined as the totality of features required by a product or services to satisfy a given need, or fitness for purpose (Swan and Kalfan, 2013). In other words, the emphasis of quality in construction industry is on the ability to conform to established requirements. Satisfactory time and cost performance is of little value if the project delivers inferior quality. The concept of quality is closely related to customer satisfaction, which has gradually been elevated as important in the construction industry (Latham, 2011; Forsythe, 2014). Customer satisfaction is commonly described as a comparison between the customer's pre-purchase expectations and their post-purchase perception.

Materials and Methods
This research sought to examine the relationship between the procurement methods adopted in Nigeria and how it influences performance of the firms.The research method adopted in this work is both quantitative and Qualitative. A structured questionnaire was administered to consultants (Architects, Quantity Surveyors and Engineers) in Nigeria. The total number of consultants could not be ascertained thus a method by Smith (2018) was adopted. A total number of 358 questionnaires were administered and 207 were correctly completed and analyzed. The mean and significance of the factors identified was discovered using 5-point Likert scale which has been found to be acceptable in Procurement research (Bubashit & Almohawis, 2011). The data collected on procurement systems and performance were analyzed using the Statistical Packages for Social Science (SPSS version 22). For the purpose of this research, questions on Procurement methods and performance were asked and placed on a 5-points Likert scale ranging from strongly agreed (5) to strongly disagree (1) in form of statements. The Cronbach alpha was used to assess the reliability of the data, the values were over 0.70 which is the acceptable.

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; December, 2020: Vol. 5 No. 3 pp. 796 – 801

797

Results and Discussion

Table 1 show that the respondents agree that design changes that aid cost management process is accommodated ranked the highest with a mean of 4.41, followed by responsibilities of designing and construction of the project are separate and are carried out by independent organizations namely the designers and contractors with a mean of 4.16 while cost control is maintained all throughthe project ranked the lowest with a mean of 4.39. overall, traditional method of procurement has a grand mean of 4.22.

Table 1: Traditional procurement method

S/N	Variable	Mean	Ranking
1	The responsibilities of designing and construction of the project are separate and are carried out by independent organizations namely the designers and contractors	4.39	2
2	Tendering processes to select a suitable contractor	4.01	4
3	Accommodates design changes and aids the cost management process	4.41	1
4	The design team is independent advisers to the client and the contractor is only responsible for executing the works in accordance with the contract document	4.28	3
5	Cost control is maintained all through the project	3.98	5
	Grand Mean	**4.22**	

Source: Field Study (2019)

Table 2: Design and build procurement method

S/N	Variable	Mean	Ranking
1	Entails the contractor carrying the work as well as construction and completion of the work	3.77	4
2	All phases of the project, from completion through design and construction are handled by the same organization	3.98	2
3	The client is aware of his total financial commitment from the onset	4.16	1
4	Single point responsibility is provided i.e. the contractor is solely responsible for failure in design and /or the construction	3.88	3
	Grand Mean	**3.95**	

Source: Field Study (2019)

The result on Table 2 shows the result of the design and builds procurement methods. The finding show that the client is aware of his financial commitment from the onset ranked the highest with a mean of 4.16, while the method entails the contractor carrying the work as well as construction and completion of the work ranked the lowest with a mean of 3.77. Design and build procurement method have a grand mean of 3.95.

Table 3 shows the result of the package deal procurement method. The findings indicate that commissioning of complete project and handover ranked the highest with a mean of 4.13 followed by the contractor prepares the sketch and obtains approval from the client before proceeding with a mean of 3.98 while the contractor is given the responsibility for the whole project including design and delivery ranked the lowest with a mean of 3.79. Package deal procurement method has a grand mean of 3.94. The findings on Table 4 show the result of turnkey procurement method. The findings show that the contractor works with an agreed plan ranked the highest with a mean of 4.19 followed by the contractor does any other necessary development to make the projects functional with a mean of 4.17 while the contractor aims to complete the project a specified date ranked the lowest with a man of 3.42. Turnkey Procurement method has a grand mean of 3.93

Table 3 Package deal procurement method

S/N	Variable	Mean	Ranking
1	Contractor is given responsibility for the whole project including design and delivery	3.79	5
2	He prepares the sketch and obtains approval from the client before proceeding.	3.98	2
3	Gets approval of statutory authorities	3.87	4
4	Finances the construction	3.91	3
5	Commissioning of complete project and hand over.	4.13	1
	Grand Mean	**3.94**	

Source: Field Study (2019)

Table 4: Turnkey method

S/N	Variable	Mean	Ranking
1	Contractor plans, design and build	3.93	3
2	Contractor does any other necessary development to make the projects functional	4.17	2
3	The contractor works with an agreed plan	4.19	1
4	The contractor aims to complete the project at a specified date	3.42	4
	Grand Mean	**3.93**	

Source: Field Study (2019)

Table 5: Develop and construct method

S/N	Variable	Mean	Ranking
1	Responsibility of design is taken over by the client through his design team	3.07	4
2	The projects characteristics are critically analyzed	3.27	3
3	Technical requirements for design and construction are fully understood	3.77	1
4	Risks are shared to reduce cost.	3.42	2
	Grand Mean	**3.38**	

Source: Field Study (2019)

Table 5 shows the result of the develop and construct procurement method. The findings indicate that technical requirement for design and construction are fully understood ranked the highest with a mean of 3.77 followed by risks are shared to reduce cost with a mean of 3.42 while responsibility of design is taken over by client through his design team ranked the lowest with a mean of 3.07; develop and construct has a grand mean of 3.38. the result for Management Contracting procurement system shows that The main contractor is appointed either by negotiation or in competition, and works closely with the team of professionals ranked the highest with a mean of 4.11 while This system has a main contractor called the management contractor who provided the management expertise in the construction of a project for a fee ranked the lowest with a mean of 3.07. Management contracting has a grand mean of 3.47 (Table 6).

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; December, 2020: Vol. 5 No. 3 pp. 796 – 801

798

Table 8: Multiple regression analysis

Model									
					Model Summary				
	R	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**				
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.871ᵃ	.759	.719	.28384	.381	6.160	4	40	.001

Table 6: Management contracting system

S/N	Variable	Mean	Ranking
1	This system has a main contractor called the management contractor who provided the management expertise in the construction of a project for a fee	3.07	4
2	The permanent works are constructed under a series of construction contracts placed by the management contractor after approval by the client	3.27	3
3	The main contractor is appointed either by negotiation or in competition, and works closely with the team of professionals	4.11	1
4	The main contractor manages and coordinates the work packages to individual sub-contractors and equally provides on the site service, plant and equipment, amenities etc. for the work	3.42	2
	Grand mean	**3.47**	

Source: Field Study (2019)

Table 7: Construction management system

S/N	Variable	Mean	Ranking
1	A fee-based arrangement in which the construction manager is responsible exclusively to the owner and acts in the owner's interest at every stage of the project	4.22	1
2	Professional's construction management treats the project planning, design, and construction phases as integrated tasks	3.27	3
3	Reduced project duration: Construction work may start as soon as sufficient work has been designed	3.18	4
4	Construction manager acts as the client's agent as a professional consultant, providing estimating, cost control and scheduling services and undertaking administrative responsibilities during construction	4.16	2
	Grand Mean	**3.71**	

Source: Field Study (2019)

The findings of the construction management procurement system show that A fee-based arrangement in which the construction manager is responsible exclusively to the owner and acts in the owner's interest at every stage of the project ranked the highest with a mean of 4.22, followed by Construction manager acts as the client's agent as a professional consultant, providing estimating, cost control and scheduling services and undertaking administrative responsibilities during construction with a mean of 4.16 while Reduced project duration: construction work may start as soon as sufficient work has been designed ranked the lowest with a mean of 3.18; management contracting has a grand mean of 3.71 (Table 7). The result further indicates that respondent have been involved in the traditional procurement method with a grand mean of 4.22 followed by the design and build procurement method with a grand mean of 3.95 while the develop and construct procurement method is the least applicable in Nigerian construction projects with a grand mean of 3.38.

Inferential statistics

The Inferential Statistics is a scientific statistical tool of analyzing the data results from the field studies. The research used regression analysis to establish the relationship between the 7 procurement methods identified and performance (Cost, Time and Quality) of construction projects in Nigeria

Regression analysis involves the following variables:
Y= Dependent variables (Performance).
X= Independent variables (Traditional system, Design and build system, package deal, turnkey, develop and construct, management contracting and construction management).
B_o= Constant (Coefficient intercept).
B_1= slope.

The result of the regression analysis on table 8 show that R square (which is the co-efficient of determination) is 0.759 which when multiplied by 100% gives approximately 76%. This indicates the effect of the independent variables (Procurement methods) on the dependent variable (performance). The Table shows that the independent variables have 76% impact on the dependent which is positive and good for consideration. And we can also see from the R (which is the correlation) = 0.871 that there is a positive linear relationship between the procurement methods and performance (Table 8). Table 9 indicates the analysis of variance result for the regression and it shows the significance of the model, whether the model can be fit for use or not, whether it is significant or not (in terms of prediction). But from the table above we have the p-value =0.01 less than the α-value = 0.05, thus the model is significant and fit for prediction.

Table 9: ANOVA

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.985	4	.496	6.160	.001ᵇ
	Residual	3.223	40	.081		
	Total	5.208	44			

a. Dependent Variable: w
b. Predictors: (Constant), v, s, t, u

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; December, 2020: Vol. 5 No. 3 pp. 796 – 801

799

Table 10: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.977	0.221		4.416	0.000
S	0.620	0.066	0.397	1.807	0.078
T	-0.124	0.049	-0.374	-2.548	0.015
U	0.309	0.146	0.331	2.122	0.04
V	0.132	0.153	0.32	0.858	0.396
W	0.232	0.111	0.321	1.514	0.279
X	-0.322	0.059	-0.319	2.327	0.003
Y	0.521	0.615	0.351	0.913	0.919

a. Dependent Variable: Z = Performance

The result on Table 10 shows that we have the dependent variable constant (w) which is cost performance to be 0.977 and the independent variables are s (traditional system of procurement) to be 0.120, t (design and build system) -0.124, u (management contracting) 0.309 and v (construction management), giving us the regression model:

$$y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7$$
$$\text{Performance} = 0.977 + 0.620x_1 + 0.424x_2 + 0.309x_3 + 0.132x_4 + 0.232x_5 - 0.322x_6 + 0.521x_7$$

Also based on the Table above, using the Standardized Coefficients Beta column we check which of the seven procurement systems has more effect on Performance. The results show that traditional procurement method 0 has the highest impact followed by design and build; while package deal procurement method has the lowest impact.

The findings of the study show that the traditional method of procurement is the most adopted in Nigerian construction projects. The findings corroborate the findings of Opatunde and Ujaddughe (2012); Ali *et al.* (2011) whose findings highlighted that the traditional method of procurement ranked highest in private sector construction and further established that the in general assessment of the procurement systems that the traditional system gives and provides the clients a good competition from contractors for the work which is also one of the rules in the new procurement acts as enacted by the federal government of Nigeria while the design and build system does not give room for that. The design and build procurement method ranked second this corroborate the findings of Oladinrin *et al.* (2013) who also identified the design and build procurement system as one of the dominant procurement systems in construction projects. This study established that the traditional procurement process as having the strongest influence on performance of construction projects. This confirms the findings of Ojo *et al.* (2014); Rosli *et al.* (2010) who identified that the traditional method of construction has the strongest impact on performance of construction projects.

Conflict of Interest
Authors have declared that there is no conflict of interest reported in this work.

Conclusion
The study has resulted in drawing valuable information regarding the impact of procurement systems on construction project performance in Kaduna metropolis.

That despite its problems and shortcomings which includes long and bureaucratic processes, lots of variation and change orders and the resultant disputes, the traditional system of procurement still remain most popular, prevalent and frequently used system. It's concluded that traditional procurement systems are the most effective system used Nigeria, then followed by design and build. Most of the contractors have much experience with this type of

procurement system in the execution of construction projects. In addition to this, the completed or largely completed designs would help contractors in forecasting workloads, allocation of resources, prepare programs, and method of statement. The study recommends the development of traditional method of procurement to conform to global best practice for improved project performance. As an alternative, the design and build procurement practice should also be developed alongside the traditional to improve performance.

References
Alhazmi T & McCaffer R 2010. Project procurement system selection model. *J. Constr. Engr. and Mgt.*, 126(3): 176-184.

Ali ZA, Zakaria N & Cheani AI 2011. The Effect of Procurement System Towards the Performance of Refurbishment Works, *America*, pp. 70-75.

Ashworth A & Hogg K 2012. Willis's Practice and Procedure for Quantity Surveyor. Blackwell Publishing Ltd, Oxford, UK.

Benett TY & Grice W 2012. Building environmental assessment methods: Applications and development trends. *Building Research and Information*, 27(4/5): 300-308.

Bubashit AA & Almohawis SA 2011. Evaluating the general conditions of a construction contract. *Int. J. Project Mgt.*, 12: 133-135.

Chan APC & Chan APL 2011. Key performance indicators for measuring construction success benchmarking. *Int. J. Project Mgt.*, 11: 203-221.

Chan CTW 2011. Fuzzy procurement selection model for construction projects. *Construction Management and Economics*, 25(6): 611-618.

Dada MO 2012. A second look: Stakeholders' perceptions of some issues in design-bid-build procurement practice in Nigeria. *J. Sust. Devt.*, 5(1): 55-63.

Eriksson P & Westerberg M 2012. Effect of Procurement on Construction. Project Performance. Division of Entrepreneurship and Industrial Organization Lulea University of Technology 97187 Lulea, Sweden.

Grimm T, Hofsetter M & Sarbis S 2016. Procurement and performance, issues and way forward. *J. Sci. and Techn.,* 8(4): 77-99.

Latham M 2011. Constructing the Team. London, HMSD.

Love PED, Skitmore RM & Li H 2010. Toward an innovative procurement. *Construction Management and Economics Journal*.

Masterman JWE 2010. Building Procurement Systems: An Introduction, E & FN Spon, London.

Molenaar K, Sobin N, Gransberg D, Tamera McCuen TL, Sinem Korkmaz S & Horman M 2012. Sustainable, High performance Projects and Project Delivery Methods. The Charles Pankow Foundation and the Design-Build Institute of America.

Odeyinka HA & Yusuf A 2011. The causes and effects of construction delays on cost of housing project in Nigeria. *J. Financial Mgt. and Property and Constr*.., 112: 31-41.

Ogunsanmi OA & Bamidele MA 2012. Procurement systems and performance of construction projects in South west Nigeria. *Journal of Management Studies,* 3(2).

Ogunsanmi OE, Iyagba ROA & Omirin MM 2012. A comparative study of the performance of traditional and labour only procurements in Nigeria. *Journal of Nigeria Institute of Building*, 12-27.

Ojo SO, Adeyemi AY & Fagbenle O 2014. The performance of traditional contract procurement in housing projects in Nigeria. *Civil Engineering Dimension*, 11(2): 102-106.

Okuwoga AA 2011. Cost-time performance of public sector housing projects. *Nigeria Habitat International,* 4(1).

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; December, 2020: Vol. 5 No. 3 pp. 796 – 801

800

Oladinrin OT, Olatunji SO & Hamza BT 2013. Effect of selected procurement system on building project performance in Nigeria. *Int. J. Sust. Constr. Engr. and Techn*., 4(1): Akure Nigeria.

Opatunde A & Ujaddughe K 2012. Procurement route for performance of government projects. *Journal of Management and Economics,* 5(6).

Peter D, Peter L, David B, Geoff W & Robert L 2010. Capital Works Procurement: The Selection of a Building Procurement Method. Project Affiliates Curtin. University of Technology Western Australia Department of Housing and Work Royal.

Pooe C, Matini J & Makhublele R 2015. Assessing procurement methods in construction. *Int. J. Educ. and Techn.,* 3(3): 99-113.

Reichstein T, Salter A & Gam D 2013. Last among equals: A comparison of innovation in construction. *Services and Management and Economics*, 23: 631-644.

Rosli AR, Ismail MT, Wan B, Wan A, Md AN, Wan AN & Zainab MZ 2010. Effect of procurement systems on the performance of construction projects. *Padang, Malaysia,* pp. 1- 13.

Rowlinson S 2013. A Definition of Procurement Systems. In Procurement Systems: A Guide to Best Practice in Construction (ed)., London: E & FN Spon, pp. 27-51.

Salter J & Torbett J 2013. Building procurement system in London. *Chartered Institute of Building Publishing*, 23(6): 91-99.

Swan W & Khalfan M 2013. Mutual objective setting for partnering projects in the public sector. *Engr. Constr. and Architectural Mgt*., 14: 119-130.

Thwala WD & Mathonsi MD 2012. Factors influencing the selection of procurement systems in the South African Construction Industry. *Afr. J. Bus. Mgt.,* 6(10): 3583-3594.

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; December, 2020: Vol. 5 No. 3 pp. 796 – 801

801