



## FACTORS INFLUENCING CHOICE OF CONSTRUCTION PROCUREMENT METHODS AND ASSOCIATED RISK

*<sup>1</sup>Adegoke B. F., <sup>2</sup>Opatunji A. O. and <sup>3</sup>Olatunde, N. A.*

*<sup>1,2</sup>Quantity Surveying Department, Federal Polytechnic Ede, Nigeria  
<sup>3</sup>Quantity Surveying Department, Faculty of Environmental Sciences,  
University of Benin, Benin City Nigeria*

*\*Corresponding E-mail: nathaniel.olatunde@uniben.edu*

*Manuscript received: 07/08/2018      Accepted: 12/03/2019      Published: March 2019*

### ABSTRACT

This research paper examines the procurement methods and associated risks with a view to enhancing the delivery of construction projects in Nigeria. The target population of the study were contractors, architects, quantity surveyors and construction clients as they are the stakeholders frequently involved in the construction procurement. The study explored purposive sampling to administer 40 questionnaires each to construction clients, architects, quantity surveyors and 60 to contractors respectively. 131 copies of questionnaire which was 77.06 % response were returned and found useful. Both descriptive and inferential techniques were used to analyze the data. The results revealed that: speed in completion of projects and flexibility of the projects were the factors influencing the choice of traditional method of procurement while cost overrun and opportunity of sharing of risk between client and contractor were the risks associated with the method. Complexity of the project and the possibility of delivery to time were most important factors influencing the selection of design and build procurement method while high cost of construction, lack of competition, expensive bidding process were the risk associated with the method. On the other hand, quality of project delivery and risks sharing were the factors influencing the choice of management procurement method and the pressure on the architect to produce the drawings and commencement of construction works with cost plan without detailed drawings were the risk associated with management oriented method of procurement. The study recommends that the method of procurement to be adopted for a project should be based on the nature and overall goal of the project.

**Keywords:** *Associated risk, construction projects, procurement methods*

## INTRODUCTION

Construction clients have introduced many new forms of procurements and contractors would have to take a greater proportion of the risk due to their inability to investigate the risk associated with the procurement method, even though both the client and contractor have proportion of risk to share in any construction project. Poor performance of construction project has been a major concern of both contractors and clients with many authors establishing the fact that construction projects traditionally have bad reputation as such known for excessive time and cost overrun (Berkeley, Humphreys & Thomas, 1991; Tah, 1993; Raftery, 1994; Ogunsanmi and Bamisile, 2001, Love, Skitmore and Earl; Willi, 2008 and Olatunde and Alao, 2017). At present, the construction industry is facing a more challenging environment than before. The increasing expectations of clients, the need to deliver higher quality products and services at tight timescale and lowest cost; the development of new construction methods, procedures, materials and new types of buildings resulted in project stakeholders facing high risks towards attaining high standards of efficiency. It is therefore important to plan and make the right decisions, which will reduce risk on cost, time and quality of the building projects at the initial stage of the proposed projects.

Risk is inevitable in all human endeavours and evidence that such an endeavour has value. Risk was defined to be a universal which is believed possess problems to individual in nearly all life endeavours (Odeyinka, 1993). Virtually all investments, tasks or projects are subject to element of risk. Risk may be physical, construction, financial and legal among others (Onyeador and Onkwuma, 2006). All projects are subject to risks, be it construction project or otherwise.

Although risk is widely studied, it still lacks a clear and shared concept definition. Risk is sometimes perceived as uninvited, unfavourable consequence, such definition has two concepts that is risk often viewed among professional as a phenomenon that is not totally identified with negativity but rather embraces both positive and negative occurrences (Adegoke, 2011).

Procurement method adopted is very much more important to success of any project, as the decision on any method adopted can make or mar the project. Shaw (2010) affirmed that procurement method greatly impact the delivery of construction projects. And the effects of the ill qualified procurement decision can be so critical to the successful delivery of any project. The ill decisions made relatively to procurement method are being referred to as risks associated with the method of procurement. Lowe and Whitworth (1996) corroborated by Radiosavljevic

and Bennet (2012) asserted that allocation of risk is central to contract and procurement strategy. If the risk associated to procurement is given necessary attention, this will likely reduce abandonment, cost overrun, time overrun and at the same time enhancing the performance of construction projects and contractors' profits. Though, many researchers have delved into various studies on risk, (Odeyinka, 1993; Smith 1999; Al Bahar and Candall ,2000; Chapman and Ward, 2003; Baloi & Price, 2003; Cohen & Palmer, 2004; Dada, 2005 and Adegoke, 2011) to mention a few, there is still dearth of literature on factors influencing choice of construction procurement methods and associated risk particularly in the study area. This paper therefore examined the procurement methods and associated risks with a view to enhancing the delivery of construction projects in Nigeria. Procurement is the acquisition of construction products which may be inform of new buildings, or space within buildings, either by directly buying, renting, or leasing from the open market, or by designing and building the facility to meet a specific need (Moshini & Davidson, 2005; Lenard and Moshini, 2008). However, JCT (2012) defined procurement as all activities undertaken by a client seeking to bring about the construction or refurbishment of a building into an existence. Procurement can as well be viewed as all processes involved in acquiring a property which always has the beginning and the end (Palaneeswaran et al., 2003). In every project the concerns of the client will focus on time, cost, value and performance or quality, in relation to both the design and construction of the building.

In Nigeria, the Public Procurement Act (2007) defined 'procurement' simply as 'acquisition' while Transparency International amplified the meaning as the acquisition of consumption or investment, goods or services. Procurement method embraces all activities in bringing construction projects in to fulfillment (Asworth & Hogg, 2007; Ogunsanmi & Bamidele, 2008). Selection of procurement method in a way is germane to the success of construction projects. The selection by the client a times is based on his past experience while the client without experience has to rely on professionals' advice. The reason is not farfetched from the complexity in nature of construction projects and uniqueness of each project.

While some authors classified procurement methods into two major categories; traditional and alternatives (Davis, Love and Baccarimi; 2008); others classified it to three; traditional (separated and cooperative method), integrated (e.g. Design and build, package deal/turnkey, public private partnership (PPP) etc.) and management oriented (e.g. Management contracting, construction management,

design and manage) (Alhazmi and McCaffer; 2000). The traditional procurement method according to the study involves client contracting separately with a designer and a building contractor i.e. separation of design and construction process. Client often preferred to engage someone who is able to interpret their needs into a clear design before proceeding with the construction phase. The architect or other consultant who may be quantity surveyor may be the client's first point of contact while the contractor will be selected by competitive tender unless there is a reason for negotiation. The key factor is that design is separated from construction (Dada, 2012). There are some risks that are associated with this type of procurement method which can be positive or negative.

Larmour (2011) asserted that the positive risk associated with the traditional procurement method include; certainty of contract cost at the point of award of the contract, tendency of low tender preparation cost, accountability due to a competitive selection of contractor, design lead and this is an added advantage to the client of having an input which can aid a high level of functionality and improved design, it can at times result in to lower tender price and it is a familiarized method of procurements (Odhigu and Yahya; 2011). The negative risk associated with the traditional procurement method as found by Alhazmi and Mc Caffer (2000) corroborated by Chartered Institute of Building CIOB report, (2010) are that it takes time to produce contract document, it tends to increase project duration, the contractor bears construction error alone, the design errors risk are borne by the client; the error which can be avoided if the contractor is brought to the process early enough during the design stage and variations in design tends to result to time and cost overrun which may at the end leads to dispute.

The Integrated (Design and Build) construction project procurement method gives opportunity to the contractor to design and construct or combine responsibility of design with fabrication. Other categories that can come under this method are; build and construct, turnkey, build, operate and transfer etc. Design and Build method is used when technical complexity is to be confronted by the use of specified specialists or where there is a need for early start on site, since the contractor is undertaking the design work. There would be opportunities to overlap the design and construction processes. The most significant risk of this method is the lack of an independent certification role in the contract (Windapo, 2013). The method in a way is trying to overcome the challenge of separating the designing from constructing and thereby commit these two

activities to the hand of a single firm. Nevertheless, the client can define the scope and also delegated timely decision in the hands of a designated authority (Ashworth, 2008). Design and Build can take various forms; design construct and maintenance (DCM), design, construct and operate (DCO), design construct, maintain and operate (DCMO). According to Alhazmi and Mc Caffer (2000) corroborated by Windapo (2013) the positive risk associated with integrated procurement method are that it saves time as construction can commence shortly after contract award, high potential from the contractors' innovation in the preliminary design, there is reduction in dispute and more effective management of any design related issues due to having a single point of accountability for both the design and construction, the contractor warrants the designs fitness for purpose, the contractor has all the experts and engineers under one roof, the client deals with one contractor or organisation solely for all the activities involved in the project delivery and defects are proactively managed due to the strict performance standard that must be maintained by the contractors during the maintenance period or operating period. Dahiru and Bashir (2015) however opined, that the negative risks associated with the method are that the contractor bears the whole risk- even the risk of design is borne by the contractor. There is high cost of tendering for this method of procurement attracts smaller pool of tenderers, it results into a longer period of tender as it takes time before preliminary design is prepared and assessed, the client may find it difficult to exert any significant level of control over the design process, the contractor may alter the design to maximize profit and minimize cost, any uncertainty in the project owner's requirement may lead to claims and disputes, it may lead to cost overrun due to uncertainties at the time of pricing the tender and the level of risk transference to the contractor, inclusion of maintenance or operations component may limit the field of potential tenderers and where maintenance activities are to be sub-contracted, the interface risk increases.

Management Oriented (Construction Management) method of procurement is usually suitable for complex projects whereby the contractor is being engaged as the managing contractor to manage the development of the design, coordination of construction documentation and manage the delivery of the entire works for the owner of the projects. While a construction manager is also engaged to act as its agent and manage the delivery of the construction works on its behalf. The manager will receive a time based fee or a percentage of the cost of the works. This arrangement is best suited where the owner wants to retain overall control of the

project including design. The construction manager must possess skills to coordinate and administer the delivery of construction contracts. The Positive Risk Associated with the method are that; there is placement of proper contract administration thereby assist in reduction of time and cost overrun for the project owner, The project owner retain high degree of control on the project, Risk emanated from management and coordination to the project owner are reduced, The project owner retain continuity of its designer, A lot of uncertainty may not have been open to the owner, it reduces management efforts on the side of project owner, the owner of the project can contribute to the design with less risk and cost, the scope can be managed to fit into owner's budget and the management of difficult coordination or interface issue made easy (Babatunde, Opaole and Ujaddughe).

The associated negative risk include; no single point of accountability to the project owner as he has to enter different contracts with the parties involved in order to deliver the job, the magnitude of the risk lies on the project owner, problem of tracing liabilities to a particular party, a breakdown in relationship of personnel can hinder the successful delivery of the project, it can lead to delay in delivery of the project if there is disagreement in the initial stage of this method, and the project owner may lose an independent source of advice (Alhazmi and McCaffer, 2000; Windapo, 2013).

At any point in making decision on the method of procurement method to adopt, there are lot of factors that may informed the client's or his advisers' decisions. These factors include certainty of price and time of completion of the project, both the parties have vested interest on this, the owner want to be assured of the price he will have to pay from the inception to the completion of the project while the contractor as well will want to be assured that he will be able to deliver to time at such a price. Speed or time of design and construction is another critical factor for choosing procurement method, as a matter of fact the project where time is of essence will not be advisable to use traditional method (Shafik and Martin, 2006). The complexity of the project may require the skill of some expertise and specialized contractor, the project of this nature will require a more complex arrangement like management contract procurement and the like (Odhigu and Yahya, 2011). The type of the client and the resources available to the client can also in a way influence the choice of procurement method (Eyitope, Ojo, Ajibola and Gbadebo, 2012). Where the client is limited in finances the alternative option would be any of the following; turnkey. Design, construct and finance. Design, construct, finance

and operate etc. Other influencing factors could be flexibilities in accommodating changes in design, risk allocation and quality requirement (Thomas, Luu, and Chen, 2001).

## MATERIALS AND METHOD

The research population for this paper comprises of quantity surveyors, architects, contractors and construction clients in Lagos State of Nigeria. This location was chosen because of its significant to this particular study. Lagos State being the former Federal Capital of Nigeria, still retains its popularity as the mega city where large and complex construction development of various kinds take place from time to time. Also, the relevant data for this study can be easily accessed since majority of the consulting and contracting firms are located in the study area.

The sample size comprises of 40 Quantity Surveyors, 40 Architects, 40 Clients and 60 Contractors in Lagos state Metropolis. Questionnaires were used to collect data from them using purposive sampling. From the total 180 copies of the questionnaire sent out only 131 copies (73%) were returned and screened fit for analysis. The decision to proceed with the analysis base on 73% questionnaire return rate was based on the assertion of Sutrisna (2009) that performing statistical analysis with response rate equal to or above the threshold 30% is acceptable. Therefore, 73% response rate was considered adequate for the research. Both descriptive and inferential statistics were used to analyze the data collected. Likert scale type 5-1 was used to determine the Relative Importance Index (RII). This was used to rank the factors that influence the choice of procurement method and associated risks. Score 5 represents most significance...., 1 represents not significance. The Standard deviation (a measure of the variation of returns or of the clustering of observations around the mean) was also used to establish the relative importance of factors that were ranked by the respondents and most specially to establish the degree of agreement among the respondents as concerning a particular factors' ranking which is a contribution to the overall result. The smaller the standard deviation, the higher the degree of consensus among the respondents on ranking of the variables.

## RESULTS AND DISCUSSION

Tables 1 showed the demographic characteristics of the respondents where client category had frequency of 22(16.8%), architects 24 (18.3%), quantity surveyors 35 (26.7%), while contractor category had frequency of 50(38.2%). This is an indication that the number of questionnaires returned were adequate and sufficient with 73% as the rate of returned

Table 1: Summary of characteristics of questionnaire respondents

Category	Classification	Frequency	Per cent
Designation	Client	22	16.8
	Architect	24	18.3
	Quantity Surveyor	35	26.7
	Contractor	50	38.2
	<b>Total</b>	<b>131</b>	<b>100.0</b>
Year of experience	1-5	9	6.9
	6-10	46	35.1
	11-15	67	51.1
	16-20	5	3.8
	21 above	4	3.1
	<b>Total</b>	<b>131</b>	<b>100.0</b>
Academic qualification	HND	21	16.0
	PGD	46	35.1
	B.Sc/B.Tech	39	29.8
	M.Sc/M.Tech/MBA	21	16.0
	PhD	4	3.2
	<b>Total</b>	<b>131</b>	<b>100.0</b>
Membership of professional body	NIA	24	25.5
	NIQS	35	37.2
	NIOB	18	19.1
	NSE	17	18.2
	<b>Total</b>	<b>94</b>	<b>100.0</b>
Type of membership	Graduate	11	11.7
	Probationer	19	20.2
	Associate	59	62.8
	Fellow	5	5.3
	<b>Total</b>	<b>94</b>	<b>100.0</b>

Source: Field Survey, 2017

The table equally revealed the level of response of each categories of respondents where the contractors had highest percentage of response, followed by quantity surveyors, architects and clients. Even though the response from each categories of the respondents was above the average when compared with the number of questionnaire sent out, it can however be inferred that the survey had the co operations of the contractors and the quantity surveyors than other categories of the respondents. This result was so probably as a result of ease of assessing the contractors on their various sites and the enthusiasm that might come from the contractors in respect of the outcome which might be of assistance in reducing the risk on contractors and in addition to this, the comparable high return rate from quantity surveyors may be attributed to the esprit de corps that exist between the researchers and quantity surveyors; since the researchers are also quantity surveyor by profession.

As regards the working experience of the

respondents, the respondents with 11-15 years of experience had frequency of 67 (51.1%) followed by 5-10 years of experience with frequency of 46 (35.1%), under 5 years working experience had frequency of 9 (6.9%), 15-20 years of experience had frequency of 5 (3.8%) and above 20 years of experience had frequency of 4 (3.1%). The implication of this is that the majority of the respondents had above 11 years of working experience meaning that the respondents are matured to give reasonable information about the subject in study. Majority of the respondents are holders of PGD (35.1%), closely followed by holder of B.Sc/ B.Tech (29.8%) while only 3.2% are Ph.D holders. 94 of the 131 respondents are members of different professional bodies and majority (62.8%) are associate members of their various professional bodies. The client of construction project does not necessarily have to be a member of any professional association and that could be the reason for the short fall. It could be inferred from this background that the respondents have sufficient knowledge about the construction industry and data collected from them were reliable and adequate.

Table 2 show the results of opinion of the respondents when asked to rank the factors that influence the selection of procurement method and the result indicated that under traditional method of procurement; the most important were the speed of getting the work delivered which was ranked 1st, with RII 0.79, flexibility ranked 2nd with RII 0.72, complexity ranked 3rd with RII 0.69. On the other hand, the least important factors according the survey were responsibility ranked 7th, with RII 0.58, risk ranked 6th with RII 0.63 and quality ranked 5th with RII 0.64.

The result of integrated method (design and build method) established that complexity of the work ranked 1st with RII 0.71 was the most important factor, closely followed by certainty ranked 2nd with RII 0.69 and quality ranked 3rd with RII 0.66. The least important factors were speed factor ranked 7th with RII 0.63, responsibility ranked 6th with RII 0.65 and risk ranked 5th with RII 0.66. This finding is in agreement with Alhazmi and Mc Caffer (2000) who established that complexity in technicality of executing projects procured by design and build method is one of the factors for its selection while responsibility, quality of jobs had little influence on its selection.

The result for management oriented method (management contract) revealed that the most critical factor influencing its selection is quality factor which ranked 1st with RII 0.78, followed by risk ranked 2nd with RII 0.70 and flexibility ranked 3rd with RII 0.68. Complexity, responsibility and certainty with RII 0.55, 0.60 and 0.65 respectively were the least important factors in that order.

Table 2: Building Procurement Methods and Factors Influencing Procurement Selection.

N	Factors Influencing Procurement Selection	Mean	Std. Dev	RII	Ranking
<b>TRADITIONAL METHOD</b>					
1	Speed	3.64	1.18	0.79	1
2	Certainty	3.27	1.22	0.65	4
3	Flexibility	3.53	1.23	0.72	2
4	Quality	3.20	1.34	0.64	5
5	Complexity	3.43	1.38	0.69	3
6	Risk	3.16	1.29	0.63	6
7	Responsibility	2.92	1.18	0.58	7
<b>DESIGN AND BUILD</b>					
1	Speed	3.62	1.19	0.63	7
2	Certainty	3.43	1.23	0.69	2
3	Flexibility	3.25	1.08	0.65	4
4	Quality	3.28	1.29	0.66	3
5	Complexity of the projects	3.53	1.17	0.71	1
6	Risk	3.23	1.15	0.66	5
7	Responsibility	3.18	1.08	0.64	6
<b>MANAGEMENT CONTRACT</b>					
1	Speed	3.33	1.19	0.67	4
2	Certainty	3.27	1.04	0.65	5
3	Flexibility	3.41	1.23	0.68	3
4	Quality	3.90	1.32	0.78	1
5	Complexity	3.76	1.13	0.55	7
6	Risk	3.52	1.19	0.70	2
7	Responsibility	2.98	1.00	0.60	6

Table 3 showed the risk associated with procurement methods in building project delivery. The three major classification of procurement methods considered were traditional methods, integrated method (design and build) and management oriented method (management contract). The following risk factors were associated with traditional method of procurement in this order; overall project duration longer than other procurement method was ranked 1st, having RII 0.75, a balance of risk is to be placed between the client and contractor ranked 2nd, having RII 0.74, cost and time uncertainty ranked 3rd, having RII 0.71, product quality required ranked 4th, having RII 0.72 and tender document from an incomplete design ranked 5th, having RII 0.61.

The results for integrated method (design and build) showed that high cost of construction was ranked 1st, having RII 0.76, expensive bidding process as honorarium need to be paid ranked 2nd, having RII 0.69, lack of competition ranked 3rd, having RII 0.73, brief for scope design may likely change was ranked 4th, having RII 0.69 and the contractor bears all the risks ranked 5th, having RII 0.68.

Associated risk in management oriented method (management contract) established that

procurement depends upon a high degree of confidence and trust ranked 1st, having RII 0.80, the project proceeds on the basic of a contract cost plan ranked 2nd, having RII 0.76, pressure on architect from the contractor to produce information so that they can start work ranked 3rd, having RII 0.68, less time being devoted to developing the design ranked 4th, having RII 0.76, there is no firm contract price before the work starts on site ranked 5th, having RII 0.38.

Table 3: Specific Risk Associated with the Procurement Methods

S/n	Risk	Mean	Std. Dev	RII	Rank
<b>TRADITIONAL METHOD</b>					
1	Tender document from an incomplete design	3.07	1.07	0.62	5
2	Cost and time uncertainty	3.66	0.91	0.73	3
3	Overall project duration maybe longer than other procurement method	3.73	1.11	0.75	1
4	Product quality required	3.56	0.89	0.71	4
5	A balance of risk is to be placed between the client and contractor	3.72	1.07	0.74	2
<b>INTEGRATED METHOD (DESIGN AND BUILD)</b>					
1	The contractor bear the risks	3.38	0.93	0.68	5
2	Lack of competition	3.63	1.13	0.73	3
3	Overall project duration maybe longer than other procurement method	3.73	1.11	0.75	1
4	Product quality required	3.57	1.89	0.71	4
	A balance of risk is to be placed between the client and contractor	3.72	1.07	0.74	2
<b>MANAGEMENT ORIENTED METHOD (MANAGEMENT CONTRACT)</b>					
1	Pressure on the architect by the contractor to				
	Produce information so that they could start work on time	3.40	0.98	0.68	4
2	Less time to develop design	3.59	1.03	0.76	3
3	The project proceeds on the basis of contract cost plan	3.73	1.16	0.77	2
4	No firm contract price before the work starts	3.50	1.00	0.38	5
5	Procurement depends on high degree of confidence and trust	3.95	1.07	0.80	1

Table 4: The Level of Risk in Procurement Methods in Building Project Delivery.

Procurement Methods	Mean	Std Dev	RII	Ranking
Traditional	2.99	1.19	0.60	3
Integrated(Design and Build	3.62	1.05	0.72	2
Management Contract	3.66	1.06	0.74	1

Table 4 depicted the three major procurement methods under the discussion of this study and the overall level of risks that affect the project delivery. Management oriented ranked 1st, having RII 0.74, integrated method (design and build) ranked 2nd, having RII 0.72 while traditional method ranked 3th, having RII 0.60. The results show that management oriented procurement method has the highest risk value which had made it to be the least used method of construction project procurement since many construction clients usually want to avoid risk (especially, negative risk). This finding was also supported by the work of (Alhazmi and Mc Caffer, (2000) and ; Windapo, (2013) who affirmed that management contract is the most appropriate and the best for large complex projects and fast moving projects where early completion is desirable on which construction problems are such that it is necessary or desirable that the design and management team includes a suitably experienced building contractors appointed on such a basis that his interests are largely synonymous with those of the employer's professional consultants. Similarly, the frequent use of traditional method of procurement for small projects and situation where the time between project initiation to completion is not a major consideration; as such is the procurement type with least risk. This finding was also in alignment with Babatunde, Opawole, Ujaddughe (2010) and Alhazm and McCaffer (2000).

## CONCLUSION

The study examined factors influencing choice of construction procurement methods and associated risk and concluded that the most influencing factor for selecting traditional method of procurement are speed in completion of projects and flexibility involved in the procurement method while taking responsibility and risk bearing had little or no influence on its selection. This conclusion is linked with the fact that the risks involved with traditional method of procurement is minimal compared with other methods of procurement. Complexity of the projects and certainty of delivery are the most influencing factors responsible for the selection of integrated procurement method (design and build) while speed

and risk involved had less influence on its choice. Quality of project delivery and risk sharing were concluded to be the most influencing factors for the use of management oriented method of procurement, while speed and responsibility had little influence on its selection. The study further concluded that cost overrun, time uncertainty, sharing of risk between client and contractor were prevailing risk associated with traditional method of procurement, high cost of construction, lack of competition, expensive bidding process were the risks associated with integrated method (design and build method), while high degree of confidence and trust from the contractors, pressure on the architect for the production of drawing on time, expectation from the project to proceeds on the basis of a contract cost plan were associated risk with management oriented method. Even though, management oriented method had the highest risk associated among the procurement methods selected and discussed, however, it was likewise identified to be the most reliable procurement method followed by integrated method (design and build) and traditional method being the least in the rankings.

The study recommends that; procurement method adopted had influence on the delivery of construction projects, therefore the nature and overall goal of the project should dictate the type of procurement method. Traditional method of procurement should be adopted for projects of small magnitude while integrated method (design and build) could be used for projects of high magnitude, complex and high quality; in addition to this where time is of essence management method of procurement would be more appropriate. Clients should be aware of high cost of construction that are associated with integrated method (design and build), and management oriented procurement method and since the projects carried out under these procurement methods can proceed on the basis of a contract cost plan, all professionals involved are thereby advised to prepare a plan that will reduce changing in design scope which can lead to cost and time overrun and the bulk of this responsibility lies on the architect and quantity surveyors. Management oriented procurement method depend on the confidence and trust repose on the contractor; therefore, a contractor should take responsibility as this will helps to reduce the risks in management procurement method. The policy makers on construction matter should not jettison the professional advice of quantity surveyor on choice of procurement method to adopt for a particular construction project for successful delivery of such project.

## REFERENCES

- Adegoke, B. F. (2011). An Evaluation of Risk Factors Affecting performance of Construction Projects in South West Nigeria. Unpublished M. Sc Dissertation, Enugu State University of Science and Technology, Department of Quantity Surveying, Enugu, Nigeria.
- Al-Bahar, J. and Crandall, K. (2000). Systematic risk management approach for construction projects. *ASCE Journal of Construction Engineering and Management*, 116 (3)533-546.
- Alhazmi, T. and McCaffer, R. (2000). Project procurement system selection model, *Journal of Construction Engineering and Management*, 126(3) 180 – 184.
- Ashworth, A. and Hogg, K. (2007). *Willis' Practice and Procedure for Quantity Surveyors*. Oxford, U.K: Blackwell Publishing Ltd.
- Ashworth, A. (2008). Contractual Procedures in the construction industry, retrieved from <http://www.buildnet.csir.co.za>. on 11th March, 2017.
- Babatunde, S.O., Opawole, A., Ujaddughe, I.C. (2010). Appraisal of project procurement methods in the Nigerian construction industry. *Journal of Civil Engineering Dimension*, 12(1) 1 – 7.
- Baloi, D. and Price, A. D. F. (2003). Modelling global risk factors affecting construction cost performance. *International Journal of Project Management* (21) 261- 269.
- Berkeley, D., Humphreys, P. C. and Thomas, R. D. (1991). Project action risk management. *Journal of construction Management and Economics* 9, 3– 17.
- Chapman, C. and Ward, S. (2002). *Managing Project Risk and Uncertainty*. Chichester; JohnWiley & Sons Ltd.
- Chapman, C. and Palmer, G. R. (2004). *Project Risk Identification and Management*. AACE International Transaction.
- Chartered Institute of Building (2010). *A report exploring procurement in the construction industry. Understanding procurement methods in practice: An alternative perspective*, UK.
- Dada, J. O. (2005). An Assessment of Risk Factors in the Procurement of Building Projects in Lagos and Abuja. An Unpublished M.Sc Thesis, Obafemi Awolowo University ile – Ife, Nigeria.
- Dahiru, A. and Bashir, A.M. (2015). Risk factors influencing construction procurement performance in Nigeria. *Arid Zone Journal of Engineering, Technology and Environment*, 11, 77-88.
- Dada, M.O. (2012). A second look: Stakeholders' perceptions of some issues in design – bid-build Procurement Practice in Nigeria. *Journal of Sustainable Development*, 5(1), 55-63.
- Davis, P., Love, P. and Baccarimi, D. (2008). Building Procurement Methods Report, Project Affiliates Curtin, University of Technology, Western Australia Department of Housing & Work, Royal Melbourne Institute of Technology.
- Eyitope, A., Ojo, S., Ajibola, M. and Gbadebo, R., (2012). Critical selection criteria for appropriate procurement strategy for project delivery in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, 422-428.
- Larmour (2011). A Study of Procurement Routes and their Use in the Commercial Sector, PhD thesis, Interdisciplinary Design for the Built Environment.
- Lowe, J. and Whitworth, T. (1996). Risk and Management of Construction Projects. An International Symposium for the Organization and Management of Construction; Shaping Theory and Practice, Glasgow, Scotland.
- Love, P. E. D., Skitmore, M. and Earl. G. (2008). Selecting a suitable procurement method for a building project. *Journal of Construction Management and Economics*, 12(2), 221-235
- Masterman, J.W.E. (2006). Building procurement retrieved from <http://www.eprints.utm.my> on 15th March, 2017.
- McDermott, P. (2000). *Strategic and emergent issues in construction procurement*. In S. Rowlinson, and P. McDermott. (Ed.) Procurement Systems: A Guide to Best Practice in Construction. E & F Spon, London, 3-26.
- Moshini, R., and Davidson, C. (2005). Building procurement – key to improved performance. In D. Cheetham, D. Carter, T. Lewis and D.M. Jaggar (Eds). *Contractual Procedures for Buildings: Proceedings of the International Workshop, 6th-7th April, University of Liverpool, U.K.*, 83.
- Odeyinka, H. A. (1993). Risk and its effect on construction cost. *The Journal of the Federation of Building and civil Engineering Contractors in Nigeria* 10, 21 – 26.
- Odhigu, F., Yahya, A. (2011). Cost benefit analysis of procurement systems and the performance of construction projects in East Malaysia. *Journal of Information Management and Business*, 181-192.

- Ogunsanmi, O.E., Iyagba, R.O.A. and Ominrin, M.M. (2003). A comparative study of the performance of Traditional and Labour-only procurement in Nigeria. *The Professional Builder*, August 12-27.
- Olatunde, N.A. and Alao, O. (2017). Quantitative appraisal of cost and time performance of construction projects in public and private universities in Osun State, Nigeria. *Journal of Engineering, Design and Technology*, 15(5), 619-634.
- Onyeador, S. O. and Ukwuoma, C. U (2006). *Facilities Management Explained for Students, Academics and Professional*. Enugu: Frank Miller Publisher.
- Palaneeswaran, E., Kumaraswamy, M. and Ng, T. (2003). Targeting optimum value in public sector projects through best value –focused contractor selection. *Engineering, Construction and Architectural Management*, 10(6), 418-431.
- Public Procurement Act (2007). An Act to establish the National Council on Procurement and the Bureau of Public Procurement as the regulatory authorities responsible for the monitoring and oversight of public procurement in Nigeria.
- Radosavljevic, M. and Bennet, J. (2012). *Construction Management Strategies: A Theory of Construction Management*. London: Wiley – Blackwell.
- Raftery, J. (1974). *Risk Analysis in Project Management*. London: E and FN Spon.
- Ramus, J.W. and Birchall, S.(1996). *Procurement System: A guide to best Practice in Construction*, London: E& FN Spoon.
- Shafik, M., and Martin, P., (2006). The impact of procurement methods on the Scottish house building industry. In: Boyd, D (Ed) Procs 22nd Annual ARCOM Conference, 4-6 September 2006, Birmingham, UK, Association of Researchers in Construction Management: pp. 81-90.
- Smith, N. J. (1999). *Managing Risk in Construction Projects*. Oxford, U. K: Blackwell Science.
- Thomas, NG., Luu, D., and Chen, S. (2001). Decision criteria and their subjectivity in construction procurement selection. *The Australian Journal of Construction Economics and building*, 70-80.
- Windapo, A. (2013) *Fundamental of Construction Management*. bookboon.com