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Assessment of Factors Influencing the Various Procurement Methods in the Delivery of Commercial Building Projects in Abuja, Nigeria

Ibrahim, A. & Shittu, A.
Dulynx.ac@gmail.com

Abstract:

Selecting an appropriate project procurement method is a complex decision-making process. The decision to select the appropriate procurement method to implement a construction project is crucial as it invariably affects project performance and delivery. Procurement of infrastructure projects is facing a global challenge with the case of developing nations being of unique interest. This study assesses the factors influencing procurement methods in the delivery of commercial building projects in Abuja, Nigeria. The study considered five (5) procurement methods and nineteen (19) factors relating to the Nigerian Construction industry. The study adopted the quantitative survey research approach and data were collected with the aid of a well-structured questionnaire administered to 130 respondents of which 95 were returned. Collected data were analysed using Relative Importance Index (RII). The study revealed that out of the nineteen factors considered, four (4) were found to be very important which are Project Completion at Estimated Cost, Cash flow and Funding Arrangement, Financial Capability of Client and Expected Performance of Project with RII of 0.91, 0.90, 0.89 and 0.80 respectively. While the fifteen (15) others were of less importance with RII ranging from 0.79 (Size of Project) to 0.61 (Quality Certification) and a general average RII of 0.76. This study revealed that all factors influencing the procurement methods in commercial project delivery are important, with varying levels of importance where some have higher RII than others. This indicates that these factors seem to determine the procurement method that will be employed for a commercial project.

Keywords: Construction, projects, Procurement, Factors, Delivery.

INTRODUCTION

The construction industry contributes to the socio-economic growth of any nation. Procurement methods for construction industry can be defined as the organisational structure adopted by client for the management of the design and construction of a building project (Masterman, 2002). However, procurement methods define the management, functional and contractual arrangement and relationship amongst project team. The procurement of construction projects is vast in scope as it involves the gathering and organising of myriads of separate individuals, firms and companies to design, manage and build construction products such as houses, office buildings, shopping complex, roads and bridges for specific clients. Different procurement methods are used for different construction projects and the correct choice may help to avoid problems and be the key to the attainment of project specific goals (Eyitope *et al.*, 2012). The selection of procurement system therefore becomes a very important task for clients, as employing an inappropriate procurement system may lead to project failure (Chua *et al.*, 1999). Clients have the responsibility to select the most appropriate procurement method for their construction projects. This has become imperative because the client is faced with various options to procure his project (Okunlola, 2012). Selecting an appropriate project procurement method is a complex decision-making process due to risks and uncertainties. Moreover, it

depends largely on the accurate identification of client requirements involved. At the time of decision, the clients and stakeholders often have little information and the project plans are not detailed enough to make a judgment about the project with certainty of outcomes (Daniel, 2012).

The decision to select the appropriate procurement method to implement a construction project is crucial as it invariably affect the project performance and delivery.

Procurement of infrastructure project is facing a global challenge. However, the case of developing nations is of unique interest (Ogunsanya *et al.*, 2016). Therefore, this study seeks to assess the factors influencing procurement methods in the delivery of commercial building projects in Abuja, Nigeria. These factors mostly relate to time, cost, quality with other underlying important factors that affect procurement selection.

Types of Construction Project Procurement Methods

Different procurement methods are used for different construction projects and the correct choice may help to avoid problems and be the key to the attainment of project specific goals (Evitope *et al.*, 2012). The traditional design-bid-build system of procurement is still dominant in the Nigerian construction sector and this may likely continue to be the trend. However, research has shown that Nigerian construction industry adopts all procurement methods in one form or another (Idoro, 2012). Apart from the traditional approach, there are now other "fast-tracking" or innovative procurement systems used by the construction industry worldwide. The variants of procurement methods available today came about from the need to improve construction project delivery, that is, project completion within budget time and acceptable quality (Project Management Institute (PMI), 2004).. The different procurement systems differ from each other in term of allocation of responsibilities, activities sequencing, process and procedure and organizational approach in project delivery (Olugbenga *et al.*, 2013). These differences have invariably affected the project performance. The different procurements method commonly in used for the delivery of construction project are provided on Table 1.

Procurement Methods in the Construction Industry:

Table 1: Procurement Methods in the Construction Industry

S/n	Procurement Methods	Functions of construction				
		Design	Build	Management	Finance	Operation
1	Traditional Method	Consultant	Contractor	Consultant	Client	Client
2	Design & Build Method	Contractor	Contractor	Consultant	Client	Client
3	Management Contracting	Consultant	Specialized Contractors	Contractor	Client	Client
4	Public Private Partnership/Joint Venture	All the functions shall be shared with parties in mutually understanding environment				
5	Direct Labour System	All the functions shall be carried out by the Client engaging and creating a direct link with professionals and tradesmen dispensing the contractor				

Source: Babatunde, (2010).

Traditional Procurement System

This method is as old as the construction industry the major feature in this method is that the design process is separate from the construction, it also requires full documents before the contractor can be invited to tender for the work. The main variants of traditional procurement method are: bills of firm quantities, bills of approximate quantities, drawings and specification; schedule of rates, cost reimbursement, and labour only. The traditional method as the name implies, is a project procurement method where the three sequential phases of design, bid and build are identified as separate tasks. It is traditionally referred to as the competitively bid contract. This method allows for all contractors that fill competent to bid for projects in a free and competitive atmosphere similar to competitive market environment. In a typical traditional approach, the client initiates the project and produces a written scope statement, identifying the project's objectives and verifying the scope definition by the architect. The architect is responsible for defining the project scope in order to facilitate a clear assignment of responsibilities and to monitor the scope change control with the project team. The design team produces complete design documents before engaging the contractor, often affecting the quality by not taking into consideration build-ability, constructability and life-cycle costing.

Design and Build

This approach gives the client a single point of contact. However, the client commits to the cost of construction, as well as the cost of design, much earlier than with the traditional approach. In this method, the contracting organization is responsible for design and construction for a lump sum price. In this system of procurement, all phases of a project, from conception through design and construction are handled by the same organization. To arrive at a choice of contractor, all contractors are required to develop a design to a certain level, prepare a tender figure and submit the whole package which is termed a proposal to be evaluated to meet client satisfaction team of consultants may be needed to assess each contractor's proposal. Evaluation of tenders in this case is usually very difficult because the contractors are not working with one design tenderers are to be informed of the criteria to be used and if price is likely to be a prime factor. This form of procurement has been used for the majority of process-oriented heavy industrial project. Projects using a design-build approach are designed and constructed by a single company or a partnership of companies. Several varieties of Design-Build have evolved including Design-Build-Maintain, Design-Build-Operate-Maintain, and Design-Build-Operate-Maintain-Warrant. Each version of Design-Build provides the government or owner with one source of responsibility for the project. Design-build can be specified in many different ways based on the magnitude of the project.

Management Contracting

Management contracting is a system whereby a main contractor is appointed, either by negotiation or in competition, and works closely with the team of professionals. Also, Oyegoke (2001) opined that "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. This Manager is appointed at the inception or better still feasibility stage to join the client's team of consultants, to help work out the design programme and site operations. He manages and coordinates the work packages to individual sub-contractors and equally provides on the site

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service, plant and equipment, amenities for the work. The fee paid to the management contractor depends on the nature and extent of the work done and not on the cost of the work. However, management contracting system is most appropriate for large and complex projects which exhibit particular problems that militate against the employment of fixed price contract procedures.

Public Private Partnership (PPP)

This procurement method refers to the collaboration between public and private sector in order to achieve financing, management or maintenance of a project or provision of a service. Public Private Partnership describes a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. Public private partnership is regarded as a tool for infrastructural development. The public private partnership is an attempt by government to tap from the enormous private resources by way of diversification and letting private hands partake in the provision of fundamental government responsibility of providing basic social and infrastructural amenities several models of PPP has evolved overtime as a form of improvement and modification to it, also depending on the magnitude and nature of work to be executed.

Direct Labour System

In the direct labour system, the client engages tradesmen directly to execute projects by either using in-house personnel to design and construct or directly employ operatives to construct. By this method, the services of a contractor are dispensed with and this elimination makes the direct labour system distinct from other procurement methods. It is believed that the system is simpler; cost-effective (the contractor's profit is eliminated prudent, corruption free and provides jobs for the populace).

Factors Influencing the Various Procurement Methods in the Delivery of Commercial Building Projects

The research study conducted in Nigeria in 2013 manifested that the traditional procurement system has been commonly employed in project execution (Arogundade, 2013). This indicates that the selection of procurement method mostly affects the project performance due to difference in level of importance of different factors in the selection of procurement methods. Many selection criteria affect the choice of the appropriate procurement method for a project. For finding and selection of appropriate method understanding level of importance of different factors will provide a helping hand to public sector clients.

A study on factors affecting the performance of public procurement in Kenya focused on three major aspects of public procurement. These aspects were information technology, competency of staff and ethical issues. From the study, it has been adduced that the use of information technology, deployment of competent staff and using the fair transparent mechanism in procurement has enhanced the delivery of all procurement organizations (Muturi, 2019). Research focused on factors affecting the implementation of procurement policies in Kenya, in which study reveals about delay in procurement is due to lack of competence in staff, different procurement policies, estimated cost, size of economic projects, responsibilities of client (Kimote&Kinoti, 2018). Manthonsi and Thwala (2012). conducted study on factors influencing the selection of procurement method in construction industry of South Africa in which the identified factors were: knowledge and influence of client in life cycle of project, nature of client, political consideration, corruption and self-enrichment, size and technical complexity of

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project, delivery time and time related constraints, funding arrangement, familiarity of procurement method, government policies and competition, risk allocation, client requirement and cash flow, lack of sources, market condition, unskilled labour, technology globalization. A research conducted on an appraisal of project procurement method conducted in Nigerian construction industry in which identified factors having an effect on selection of procurement were reported as: estimated cost and time at project completion, minimum time of design and construction, quality assurance, financial management and control, complexity and flexibility of design and techniques to entertain the client requirement, consultancy offered, risk avoidance, available information at project inception, nature of project and client (Babatunde *et al.*, 2010).

A research work conducted by Nabil and Osama (2017) in Gaza on the selection of accurate it is indicated that the most affected six factors involved in the adoption of accurate procurement methods in the construction of projects are cost competition, degree level of complexity project, time criteria of the project, size of a project, financial capability of client and experienced client in procurement system. Furthermore, studies conducted by Osama (2013), Shirley and Lin (2014), Arogundade (2013), and Doloiet *al.* (2008) also addressed the selection of procurement. Based on literature cited above, this study considered various factors which relating with the Nigerian environment and construction industry which mainly affect the selection of procurement and for further investigation in context of set objective.

The factors influencing the selection of procurement methods were considered and categorized from the above review of literature as follows:

A. Category-1: Client characteristic related factors

- a. Financial capability of client
- b. Client experience in procurement method
- c. Availability of qualified personnel
- d. Integrated Design and Construction

B. Category-2: Time related factors

- a. Project completion at estimated time
- b. Construction time
- c. Delivery time Schedule

C. Category-3: Cost related factors:

- a. Project completion at estimated cost
- b. Cash flow and Funding Arrangement
- c. Price certainty

D. Category-4: Quality related factors

- a. Quality Certification
- b. Experience of project contractor
- c. Required level of quality control
- d. Expected performance of project

E. Category-5: Other related factors

- a. Procurement Policy
- b. Size of Project
- c. Market Condition
- d. Economic condition
- e. Availability of resources

METHODOLOGY

This research focuses on factors influencing procurement methods on commercial project delivery. The study adopted the quantitative survey research approach. For the purpose of this study, data were collected with the aid of a well-structured questionnaire which were self-administered to construction professionals involved in the usage of various procurement methods in Abuja.

The targeted population of respondents for this research constitutes building industry professionals (Architects, Quantity Surveyors, Builders and Engineers) in selected Federal Capital Development Authority (FCDA) in Abuja. This selection was made because they are highly staffed and are involved in majority of the commercial buildings in Abuja. FCDA has a unit responsible for procurement and the criterion for selecting the professionals was their involvement in the procurement and construction process of commercial buildings. This study employed the use of purposive sampling technique to select the respondents that were used for the research. The population size was estimated at 194 consisting of construction professionals and sample size estimated at 130 using Yamane (1967) formula. A total of 130 questionnaires were administered after which 95 were returned which is a 73% response rate. Analysis of data was carried out using Relative Importance Index (RII) which was employed to examine the factors influencing the various procurement methods in the delivery of commercial building projects in Abuja in order of importance to achieve aim of the study. Data processing was done with the aid of Statistical Package for the Social Sciences (SPSS 2) software version.

RESULTS AND DISCUSSION

This section presents and discusses the results of this study by linking the results to existing findings in the literature. The table below gives a summary of the results of factors influencing procurement methods in the delivery of commercial building projects in Abuja.

Table 2: Factors Influencing the Various Procurement Methods in the Delivery of Commercial Building Projects in Abuja

S/No.	Factors Influencing Procurement Methods	RII	Rank	Decision
1	Project Completion at Estimated Cost	0.91	1st	Very Important
2	Cash flow and Funding Arrangement	0.90	2nd	Very Important
3	Financial Capability of Client	0.89	3rd	Very Important
4	Expected Performance of Project	0.80	4th	Very Important
5	Procurement Policy	0.79	5th	Important
6	Size of Project	0.79	5th	Important
7	Clients Experience in procurement	0.77	7th	Important
8	Market Condition	0.77	7th	Important
9	Economic Condition	0.77	7th	Important
10	Required Level of Quality Control	0.76	10th	Important
11	Experience of Project Contractor	0.75	11th	Important
12	Construction time	0.75	11th	Important
13	Availability of Resources	0.73	13th	Important

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14	Proj. Certainty	0.72	14th	Important
15	Availability of Qualified Personnel	0.70	15th	Important
16	Project completion at Estimated time	0.70	15th	Important
17	Delivery and Time Schedule	0.70	15th	Important
18	Integrated Design and Construction	0.67	18th	Important
19	Quality Certification	0.61	19th	Important
	Average RII	0.76		Important

Source: Researcher's Analysis of Data (2020)

From Table 2, it was shown that out of the nineteen (19) factors influencing the various procurement methods in the delivery of commercial building projects in Abuja identified from review of literature, four (4) factors are very important. These are Project Completion at Estimated Cost, Cash flow and Funding Arrangement, Financial Capability of Client and Expected Performance of Project with RII of 0.91, 0.90, 0.89 and 0.80 respectively. The remaining fifteen (15) factors are important with RII ranging from 0.79 (Size of Project) to 0.61 (Quality Certification). On the average, the factors influencing the various procurement methods in the delivery of commercial building projects in Abuja are important (average RII = 0.76). This is in line with the finding of Nabil and Osama (2018) who stated that project completion at estimated cost, cash flow, cash flow and funding arrangement, expected performance of project in relation to project characteristics and financial capability of client in relation to client's characteristics are highly important factors in influencing the selection of procurement methods. It is also in line with the findings of Babatunde. (2010) and Nabil and Osama (2017) where they listed estimated cost at project completion, financial management and control and financial capability of client as key factors influencing accurate procurement strategy.

CONCLUSION AND RECOMMENDATION

This study reveals that all factors influencing the procurement methods in commercial project delivery are important, with varying levels of importance where some have higher relative importance index than the other, Project Completion at Estimated Cost, Cash flow and Funding Arrangement, Financial Capability of Client and Expected Performance of Project are having the most influence on procurement methods in commercial project delivery while the other 15 factors having lower importance levels with Quality Certification being the lowest. This indicates that these factors seem to determine the procurement method that will be employed for a commercial project which will affect the project procurement process during project actualization and further affect the project performance and delivery. It can be concluded that the factors influencing the procurement methods are important in procurement selection process of commercial building projects in Abuja. Therefore, proper attention should be paid to these factors in relation to the construction environment or construction purpose as it will partly determine the success or failure of the project delivery. Professionals should also properly advise clients on the appropriate procurement method for the execution of commercial building projects in order to avoid problem with time, cost and quality associated with the project.

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