ASSESSMENT OF THE FACTORS INFLUENCING THE CHOICE OF CONTRACT PROCUREMENT FOR SUSTAINABLE HOUSING DELIVERY IN ABUJA

SANNI MAJIYEBO ABUBAKAR AND J.E IDIAKE
Department of Quantity Surveying, Federal University of Technology, Minna.

Abstract
Contract procurement method as a strategy that meant to satisfy the client's development or operational needs with respect to the provision of constructed housing is required to have high sustainability index. It is crucial that clients make the absolute right choice of a project procurement method in a progressively complex condition due to certain inherent factors. It is on this basis that the study analysed the views of 241 built professionals in Abuja through closed-ended questionnaires that was administered through simple random

Keywords: contract, procurement method, housing delivery, sustainability

INTRODUCTION
Contract procurement strategy for sustainable housing delivery is hardly undermined in any construction work, in that, it is organized processes and procedures for clients to obtain and acquire construction products (Abdul Rashid et al., 2006). An appropriate contract procurement strategy, typically developed during the 'evaluation' or 'definition' phases of a project, is a key determinant of successful housing project delivery as it is more than just a high-level plan, it details, practically, the recommended delivery model to be deployed in delivering a project while it also provides clear justification for use on a value-for-money basis (Casey & Bamford, 2014). Contract procurement method as a strategy that meant to satisfy the client’s development or operational needs with respect to the provision
the most important factors influencing the choice of procurement method were Time and cost. Sustainable construction materials and indoor environmental quality were major drivers of sustainable housing delivery. Conclusively, design and build and tradition method were mostly used as it saves time and cost of projects.

of constructed housing is required to have high sustainability index (Kibert, 2005).

However, contract procurement strategy in the delivery of sustainable housing could be considered as the skilful planning and managing of the delivery process, involving an implementable carefully devised plan of action (Miller, 2013) It is about taking appropriate decisions in relation to available options and prevailing circumstances with the intention of achieving sustainable built environment. It is therefore emphasised that the adoption of effective procurement methods will initiate the achievement of efficient sustainable housing delivery in respect of cost, time and quality at all times (Masterman, 2003). Also, adoption of an effective procurement strategy will enhance the achievement of client and stakeholder satisfaction throughout the building life cycle in regard to cost, time and quality, both now and thereafter.

Therefore, in efforts to improve contract procurement performance, many new procurement systems emerged globally during the 1980s and 1990s, providing better selections and flexibility. It is crucial that clients make the absolute right choice of a project procurement method in a progressively complex condition with an extensive array of objectives and procurement systems. Amidst the prevailing procurement methods, the traditional method of contract procurement was previously the most common and widespread form of public sector project procurement strategy until the inadequacy of the method surfaced around 1960 (Miller, 2013). The aim of this study is to access the factors influencing contract procurement strategies for sustainable project delivery. Most of the contract procurement strategies in Nigeria especially in Abuja have not been always found compatible with supply chain management framework that has been established and inability to meet the needs of a decentralized public construction contract procurement system to serve the need of private sector have posed danger to sustainability of housing delivery.
LITERATURE

Conceptual framework of Procurement Strategies for Housing Delivery

The environmental, social and economic value of housing cannot be underestimated, particularly housing that has been especially designed to improve the liveability of the immediate environment that is essential to building communities, improving social wellbeing and sustaining high standards of living into the future (Sutton, 2000). Well-planned and managed investment in housing projects plays a vital role in supporting economic, environmental and social growth and providing capacity to meet the increasing demand for services that accompany strong housing development (Casey & Bamford, 2014).

Furthermore, an appropriate procurement strategy that establishes careful consideration and analysis of all available options will enable clients to identify the delivery model and procurement method most suitable for the project in question. By adopting an appropriate procurement method, clients can expect to achieve best value-for-money outcomes as risks will be most effectively managed and the occurrence of contractual disputes, cost and time overruns, as much as possible, will be minimized (Akram et al., 2012).

Hughes et al. (2006) posit that within the construction sector, contract procurement has become a complex matter. This is because it refers not only to what is bought, but also to a diverse array of methods for acquiring a vast range of construction products. Before developing a general view of the difference in contract procurement methods, it is advantageous to identify the main features of existing procurement approaches. According to Ashworth (2006) and Hughes et al. (2006), the following are the contract procurement strategies adopted in delivering housing projects in the construction sector:

1. Traditional procurement method;
2. Design and Build procurement method;
3. Management contracting procurement method;
4. Construction management procurement method;
5. Project management procurement method;
6. Direct labour procurement method;
7. Labour only procurement method; and
8. Public-Private-Partnership (BOT, DBOT, DBFO, ROT, BOOT, LROT) procurement methods.

The selection process of a procurement strategy intends to provide clients and all involved stakeholders with a level of transparency and objectivity for the justification of the procurement method to be recommended, as a procurement
method gives an outline of the basic means by which project objectives are to be met. The development of a procurement selection process for the execution of a construction project has an essential impact on the achievement of best value-for-money for clients, as there is no particular procurement method appropriate for all project needs (Davis et al., 2008). While identifying the factors that influence the selection of a contract procurement strategy, it is vital to comprehensively examine the processes involved in the selection of a contract procurement strategy that meets particular project requirements (Thomson & Jackson, 2007). During the project development phase (project appraisal and program formulation) decisions should be taken on the type of building that is needed, the scheduled time frame for the delivery, and the estimated cost available to construct it; hence, it is vital to consider the procurement strategy or strategies that might be best suited to deliver the required project requirements (CWMF, 2008). It is of utmost importance to clearly identify project objectives and constraints in the selection process; actions taken should be appropriately considered and comparisons should be made concerning the most suitable procurement method and how it meets project needs. Casey and Bamford (2014) identified a four step approach to the selection of a procurement method. Notably, Davis, Love and Baccarini (2008) posited that after the completion of each step of selection, crucial decisions must be taken cautiously and documented to justifies the process of transparency. This also serves as a learning tool for upcoming procurement related decisions. The key objectives of any project are usually identified during the project definition phase (from the project management point of view), as a prerequisite to the procurement strategy selection (CWMF, 2008).

Hayles (2004) stated that the adaptation of sustainable construction principles delivers better long-term value to the built environment and its occupants. Manoliadis and Tsolas (2006) outlined fifteen drivers for change to implement sustainable construction. These should stimulate stakeholders to adopt sustainable design in their building project at the briefing process. There are several potential barriers to the implementation of sustainable construction with the main one being perceived cost. The common perception about sustainable buildings appears to be that they cost more than ordinary buildings. They increase initial costs by an average of 2 to 7 per cent over ordinary building cost, and only some projects can recoup overall net costs in a short period. Decision makers rarely use whole life cycle costs to estimate reduced operating expenses (Castillo and Chung, 2005). These barriers can be overcome by shifting the thinking of stakeholders from cost to value and from short-term to long-term.
METHODOLOGY
The study comprises of the professional building contractors in Abuja, the capital city of Nigeria. The study utilized only primary source of data. The primary source data used questionnaires to collect relevant information from certified building contractors in Abuja. The study adopted simple random sampling technique is considered appropriate because the homogenous nature of the population. It is also considered appropriate because every building contractor has equal chance of being selected.

The method of data analysis required for the study required both descriptive and inferential method. Descriptive analysis comprised of mean and Likert scaling, percentages and mean. Inferential statistic used Chi-square test to determine the relationship in the opinion of respondents the sample size for the study population was determined using sample size model expressed as follows:

\[ n = \frac{N}{1 + N(e)^2} \]

Where;
- \( n \) = Sample size
- \( N \) = Sample population
- \( e \) = Level of precision (0.05)

Bases on available on number of built professionals in at 660, the sample size is derived at 246 for the study and 246 questionnaires were administered and 241 questionnaires were returned.

RESULTS
Table 1 Demographic Information
The result of demographic information showed that 95% majority were male and 81% had first degree. 83% majority had between 11-20yrs.

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>229</td>
<td>95</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>100</td>
</tr>
<tr>
<td>Educational Qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ND</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>HND</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>B.SC/B.tech</td>
<td>196</td>
<td>81</td>
</tr>
<tr>
<td>Master/Phd</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>100</td>
</tr>
</tbody>
</table>
Year of working experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 10 years</td>
<td>30</td>
<td>12.4</td>
</tr>
<tr>
<td>11-20 years</td>
<td>211</td>
<td>83</td>
</tr>
<tr>
<td>21 years and above</td>
<td>11</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>241</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: field survey, 2019

**Figure 4.1 Commonly Used Procurement Method**

The result of the most commonly used procurement method revealed that design and build is the most commonly used method at 50% response. This is also followed by traditional method. The least used method is management contract and labour based method 5% each.

![Bar chart showing commonly used procurement methods](chart.png)

**Table 4.2 Effectiveness of the Contract Procurement Method**

The result of effectiveness of the contract procurement method presented in showed that design and build is the most effective method and relative level of occurrence at 80% suggesting a very high level of relative used in construction. This followed by traditional method at 79%.

<table>
<thead>
<tr>
<th>Method</th>
<th>N</th>
<th>Sum</th>
<th>Mean</th>
<th>Relative Occurrence Index</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional method</td>
<td>241</td>
<td>958.00</td>
<td>3.9751</td>
<td>79%</td>
<td>2</td>
</tr>
<tr>
<td>Design and Build</td>
<td>241</td>
<td>962.00</td>
<td>3.9917</td>
<td>80%</td>
<td>1</td>
</tr>
<tr>
<td>Labour based Method</td>
<td>241</td>
<td>941.00</td>
<td>3.9046</td>
<td>78%</td>
<td>3</td>
</tr>
<tr>
<td>Management contract</td>
<td>241</td>
<td>945.00</td>
<td>3.92</td>
<td>78%</td>
<td>3</td>
</tr>
<tr>
<td>Private partnership</td>
<td>241</td>
<td>905.00</td>
<td>3.7137</td>
<td>74%</td>
<td>4</td>
</tr>
</tbody>
</table>

Field survey, 2019
The driver of sustainable housing delivery strategies presented in table 4.4 revealed that sustainable construction materials and indoor environment quality were the major drivers of sustainable housing delivery strategies as 83% and 82% level of importance.

<table>
<thead>
<tr>
<th>Drivers</th>
<th>N</th>
<th>Sum</th>
<th>Mean</th>
<th>RII</th>
<th>Rankin</th>
</tr>
</thead>
<tbody>
<tr>
<td>land use regulations</td>
<td>241</td>
<td>917.00</td>
<td>3.8050</td>
<td>0.76</td>
<td>6</td>
</tr>
<tr>
<td>new kinds of partnerships and project stakeholders</td>
<td>241</td>
<td>930.00</td>
<td>3.8589</td>
<td>0.77</td>
<td>5</td>
</tr>
<tr>
<td>urban planning policies</td>
<td>241</td>
<td>951.00</td>
<td>3.9461</td>
<td>0.79</td>
<td>4</td>
</tr>
<tr>
<td>indoor environmentally quality</td>
<td>241</td>
<td>989.00</td>
<td>4.0332</td>
<td>0.81</td>
<td>3</td>
</tr>
<tr>
<td>sustainable construction materials</td>
<td>241</td>
<td>996.00</td>
<td>4.1037</td>
<td>0.82</td>
<td>2</td>
</tr>
<tr>
<td>performance-based on standards</td>
<td>241</td>
<td>975.00</td>
<td>4.0456</td>
<td>0.81</td>
<td>3</td>
</tr>
<tr>
<td>re-engineering the design process</td>
<td>241</td>
<td>972.00</td>
<td>4.1328</td>
<td>0.83</td>
<td>1</td>
</tr>
<tr>
<td>new cost metrics based on economic and ecological value systems</td>
<td>241</td>
<td>930.00</td>
<td>3.9461</td>
<td>0.79</td>
<td>4</td>
</tr>
<tr>
<td>energy conservation</td>
<td>241</td>
<td>951.00</td>
<td>3.9461</td>
<td>0.79</td>
<td>4</td>
</tr>
</tbody>
</table>

Findings and Conclusion
In summary, the design and build as well as traditional method of procurement were the commonly used method of procurement by professional in construction industries because of the flexibility. Time and cost were identified as most important factors influencing the choice of procurement method among others. Sustainable construction materials and indoor environmental quality were major drivers of sustainable housing delivery. Conclusively, design and build and tradition method were mostly used as it saves time and cost of projects. Sustainability in project procurement required sustainable construction materials and indoor environmental quality.

REFERENCES


