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A framework for ethical procurement of construction projects in Nigerian Federal Universities

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Abstract. Procurement of construction projects in Nigerian Federal Universities has been affected by unethical procurement practices amongst the stakeholders and projects parties concern. This study aims at developing a framework to mediating the large negative effects of unethical procurement practices on construction projects development. Conflict of interest factors, especially at the tender and bid evaluation stages, were identified as the major unethical practices affecting construction procurement processes of infrastructure projects negatively. Data were collected using a survey questionnaire distributed to construction procurement stakeholders of nine randomly selected Nigerian Federal Universities. Mediation effect of ethical procurement practices was tested between the conflict of interest factors and procurement of construction and infrastructural projects. The findings revealed that conflict of interest factors were found to have large negative effects on procurement of construction and infrastructural project, and ethical procurement practices identified and introduced as mediating variables were tested and verified to possibly mitigate the effects of conflict of interest factors affecting the procurement of construction and infrastructural projects in Nigerian federal universities. Hence, the study recommends that procurement entities concern should ensure compliance with Public Procurement Guidelines (PPGs), which highlights ethical requirements for tendering, bid evaluation and construction processes for the procurement of construction and infrastructural projects.

1. The study background
Procurement of physical infrastructure facilities mainly offices buildings, lecture theatres and classrooms blocks, laboratories, library and hostels accommodations, roads and related operational services by the Nigerian federal universities are attained through public procurement processes under the physical procurement units or works departments. The management of these federal universities plays the role of a typical client in procurement processes to ensure the availability of physical facilities and social amenity services obtained via public procurement methods. Generally, construction procurement involves a series of complex activities [1]. The building construction procurement contacts are often termed as complex in nature because it involves transferring the responsibilities of procurement task to external parties ranging from contractors, suppliers, and professional consultants as well as project managers [2]. A review of the feasibility of procurement processes carried out by Shehu [3] reported a result of a pilot study recently conducted by physical planning units of some selected Nigerian federal universities proved that most of the procurement funded through capital grants is protracted because of uncertainty of funds due to non-remittance of budgetary allocations. Conversely, all
procurement funded through local donor agencies like Tertiary Educational Trust Fund (TETFUND), Central Bank of Nigeria (CBN) and Petroleum Development Trust Fund (PDTF) performs more creditably. In fact, between 2012 to date, about 97% of the procurement of physical facilities and supply contracts funded by these agencies are delivered before the completion period [3]. Other issues affecting the procurement process in Nigerian federal universities are the proliferating conflict of interest, mainly due to non-compliance with public procurement guidelines (PPGs) [4]. According to Shehu [3], issues related to conflict of interest in the construction procurement process at both pre and post contract stages have been affecting the rate of compliance with PPGs in Nigerian Federal Universities. It is reported that sometimes contractors are nominated to the university procurement entities by directors and top government functionaries without following the prescribed bidding and evaluation procedures [5]. Therefore having an effectual, transparent, as well as fraudulent-free procurement framework, developed based on ethical and a well-structured legal framework and procedural manual could go a long way in uplifting the standard of procurement of construction and infrastructural facilities in Nigerian Federal universities. Thus, the need for this study, which is aimed at developing a framework for ethical procurement of construction projects in Nigerian federal universities.

2. Literature review & hypotheses development

This section of the paper presents a review of literature related to the core variables of the research, and as well it presents the hypotheses of the study. Conflict of interest is the independent variable (IV) of the research, ethical procurement practices are the mediating variable of the study which is introduced and tested on conflict of interest factors affecting the procurement of construction and infrastructural projects as the main outcome variable of the study.

2.1. Conflict of interest amongst construction procurement stakeholders
Conflict of interest is referred to as a situation when secondary interest improperly overrides the primary interest in making judgements. It is a form of unethical behavior totally different from fraud, bribe and corruption. According to Obicci [6], attaining the prime objectives of public procurement management is jeopardized in most cases by the conflict of interest amongst the various stakeholders involved either at pre-contract, post-contract or both stages. However, in construction procurement, it is believed to be more prevailing at the pre-contract stages especially during tendering, bidding, evaluations and project award stages with shreds of evidence of influencing projects awards based on conflict of interest [3]. Therefore, accountability, transparency and fairness as sensitive to the scale and coordination of public procurement output are affected in a great way by the conflict of interest amongst various parties. Considering the vast financial resources involved in the procurement of infrastructural and physical facilities, majority of the tasks operate within a setting that is vulnerable to conflict of interest as it is associated with ample political, and high public expectation for improvement of services [6]. Although the bidding and project evaluation and awards stages are believed to be more vulnerable to conflict of interest issues. A report released by transparency international in 2013 pointed that conflict of interest affects almost all the stages in the procurement process. The bid evaluation stage is the most vulnerable to conflict of interest for it requires a high level of expertise to appropriately evaluate and award construction projects to most competent contractors [7].

2.2. Ethical procurement practices
Ethics refer to the measure of moral principles through which human actions are judged as either being right or wrong [8]. Ethical practices are a concern with doing that which is morally right in any given situation [9]. Generally, the moral standard is used in guiding decision making at both individual and organizational levels. Hence ethics determines the behavioural rules and human actions used as the moral standard to controls individuals and business decisions as well as the way profession is practised. While professional ethics are sets of principles and notions guiding the professional practice and all other conducts of professional bodies. In construction project procurement, ethics refers to the guiding principles, values, and practices followed in procurement management practices to ensure effective
services delivery, and all other aspects of work discharge accordingly [10, 11]. Therefore, ethical practices in construction procurement require procurement stakeholders to portray certain moral conduct throughout the entire process. These embrace concepts of honesty, integrity, probity, diligence, fairness, trust, respect, consistency and adherence to procurement guidelines and manual [10]. In line with this assertion, Orobo Abere and Muturi [11] identified some of the unethical procurement practices to include bribery, gifts, lobbying, and evaluation of bids by incompetent procurement staff or hired consultants in addition to weak reporting system, further maintained that ensuring ethics in public procurement help to reduce the chances of malpractices.

2.3. The study hypothesis
In order to achieve the aim of the study based on the highlighted issues of unethical procurement practices, the following hypothesis were developed;

H1: There is a Causal relationship between conflict of interest factors and procurement of construction and infrastructural projects in Nigerian Federal Universities.

H2: Ethical procurement practice mediates the effects of the relationship between conflict of interest factors and procurement of construction and infrastructural projects in Nigerian federal universities

3. Conceptual mediation framework of the study
Figure 1 below is the proposed framework which shows the relationship between the study independent, dependent and mediating variables. Conflict of interest is the independent variable, ethical procurement practices are the mediating variable and procurement of construction and infrastructure project is the dependent or outcome variable of the study. Figure 1(a) shows the total effect portion of the framework path-c, while figure 1(b) shows the direct effect and the indirect mediation effects of the proposed framework path-a, path-b and path-c’.

Figure 1. (a) Total Effect Model (b) Proposed Framework of the Study.
4. The research methods

A quantitative research design via a survey was used in this study, and a questionnaire survey as the appropriate instrument was used to collect data [12]. The questionnaire was designed with a five-point Likert scale; 1 for strongly disagree and 5 for strongly agree. Giudici [13] posited that the Likert scale is the most widely used scale in measuring research variables that ensure consistency. Content of the instrument was validated, construct reliability was achieved using factor analysis as presented in table 1 below;

Table 1. Factor analysis from pilot testing.

<table>
<thead>
<tr>
<th>Variable/Construct</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict of Interest Factors</td>
<td>10</td>
<td>0.746</td>
</tr>
<tr>
<td>Ethical Procurement Practices</td>
<td>10</td>
<td>0.789</td>
</tr>
<tr>
<td>Procurement Construction Project</td>
<td>11</td>
<td>0.784</td>
</tr>
</tbody>
</table>

4.1. Data collection method

A total of 540 questionnaires were randomly distributed to construction procurement stakeholders as major projects parties in procurement entities of 9 selected federal universities in northern Nigeria using stratified random sampling technique. Four hundred and ten (410) questionnaires were returned, but only 379 were used for the analysis yielding 76% and 70% return and response rate respectively. Process macro software written by Hayes [14] was used for the mediation analysis, it is one of the newest mediation tool used as a regression-based package capable of analysing more than 70 different mediation and moderation models [15]. Bootstrap confidence interval and Sobel Test methods were used in the analysis using process macro.

4.2. Results and discussion findings

The confirmation or presence of mediation effects occurrence in a model was judged based on indirect effects i.e. effects along path-a, and path-b [16]. Statistically, indirect effects are the difference between total effects (path-c) and the direct effects (path-c'); the result should be equal to the product of path-a, and path-b. [17]

\[ \text{i.e. mediation or indirect effects (c - c') = (0.4391 - 0.3301) = 0.0109} \] (1)

The main mediating or indirect effects \(= a \times b = (0.3721 \times 0.0295) = 0.0109 \) (2)

Equally, the mediating or indirect effect automatically generated by the process macro software is 0.0109, as shown in table 2.

Table 2. Total, Direct & Indirect Effects of the Study model.

| Total effect of Conflict of Interest (IV) on Const Project Performance (DV) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Effect          | SE              | t               | p               | LLCI            | ULCI            |
| 0.4391          | 0.0114          | 30.7561         | 0.0000          | 0.3268          | 0.3714          |

| Direct effect of Conflict of Interest (IV) on Cost. Project Perform (DV) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Effect          | SE              | t               | p               | LLCI            | ULCI            |
| 0.3301          | 0.0219          | 15.4175         | 0.0000          | 0.2952          | 0.3815          |

| Indirect effect of Conflict of Interest (IV) on Cost. Project Perform (DV) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Ethical Procurement Practices | Effect | Boot SE | BootLLCI | BootULCI | Ethical Procurement Practices | 0.0109 | 0.0223 | 0.1330 | 0.5561 |
Accordingly, necessary to further confirm and validate the first result obtained via Bootstrap Confidence Interval method as statistically recommended [18, 19]. The indirect effect from the Sobel Test result is 0.0109, which is the same value of the indirect effects obtained via Bootstrap confidence interval method (a-path * b-path) and (path-c – path-c’). This shows consistency between two same results obtained via two different approaches, and the value is totally different from zero which further confirm mediation occurrence in the proposed framework with $Z = 0.5728$ and $p = 0.0012$ ($p < 0.05$) as shown. Based on this mediation effects obtained, it can be concluded that ethical procurement practices have partially mediated the effects of conflict of interest amongst construction procurement stakeholders, which will subsequently improve procurement processes of construction projects. Prior studies found vital reasons for inducing ethical procurement practice in public procurement as a tool for sustainable planning and developments of construction and infrastructural facilities; these include the studies of Edquist [20], Hommen and Rolfstam [21] and Edquist [20]. Accordingly, ethical procurement practices are promoted in public procurement by institutionalizing public procurement systems, which brings practical policy-making a reality and positively affects construction projects performance based on the mediation result as above. The derived mediation model of the study is presented in figures 2a and 2b, showing all the coefficients along the paths that make up the proposed framework.

![Figure 2a](image1)

**Figure 2a.** Direct & Indirect Effects Model

![Figure 2b](image2)

**Figure 2. (a) Total Effect Model (b) Developed Framework of the Study.**

4.3. Conclusion & recommendation

This study aimed to develop a framework for ethical procurement of construction projects in Nigerian federal universities. Conflict of interest issues at both pre-contract and post-contract stages were identified as the independent variable of this study affecting construction project performance as the dependent construct of the study. The mediation effects obtained indicate that ethical procurement practices has the potentials to mediate the negative effects of conflict of interest factors on procurement of construction and infrastructural projects in Nigerian federal universities. Therefore by encouraging ethical procurement practices amongst major construction procurement stakeholders and project parties would possibly mitigate the rampant occurrence of conflict of interest at both pre-contract and post-
contract stages of construction procurement development. Hence, the study recommends that procurement entities and works departments of Nigerian Federal Universities should ensure compliance with Public Procurement Guidelines (PPGs) which highlights ethical requirements for tendering, bid evaluation and construction processes for the procurement of construction and infrastructural projects. The study also recommends for the prompt establishment of the National Council of Public Procurement (NCPP) as provided by the PPA 2007. In the long run, the resultant effects will lead to sustainable planning and development of physical infrastructural facilities in federal universities in Nigeria.

References
March, 2013

[20] Edquist C 2009 Public Procurement for Innovation (PPI)–a Pilot Study (Lund: CIRCLE, Lund University)