



DEVELOPMENT OF FORENSIC FRAMEWORK FOR POST CONTRACT CONSTRUCTION COST

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ABSTRACT

The need to ensure economical and transparent cost delivery of construction project is a major challenge in the construction industry. This study addressed this challenge by postulating a framework for carrying out forensic analysis of post contract construction cost (FAPCCC). The study identified the rightful initiator(s) of FAPCCC, identified and evaluated the prerequisites that necessitates FAPCCC, validated procedure for carrying out FAPCCC and postulated a procedural framework for carrying out FAPCCC. Quantitative methodology was adopted. Structured questionnaire randomly distributed using google form to various categories of Quantity Surveyors targeting the six geopolitical zones of Nigeria via online due to Covid-19 pandemic, formed the basis for data collection. Forty-five (45) responded and the obtained data presented in tables, were analysed using frequency distribution and percentage. Analysed data were discussed in comparison with extant literature and conclusion drawn. The findings of the study revealed that the client, project manager and project financier like Tetfund could initiates FAPCCC. Prerequisites for FAPCCC include suspected fraud, suspected collusion and final account exceeded the initial budget without increase in scope of project, Timing for FAPCCC is dependent on each initiator but most respondents forty-one (41) out of forty-five (45) favoured carryong out FAPCCC after each interim valuation by consultant Quantity Surveying firms. Possible stages in carrying out FAPCCC were identifies and validated through the repsonses obtained from the target population. A flexible payment method (negotiation) proved to be most preferred as payment approach to forensic analysts and culprits should be responsible for the payment. The study concluded that the FAPCCC clause should be included in letter of commisioning of consultants and award letter to the contractor to discourage illegal activities that undermine financial probity of construction projects. The postulated framework would guide engaged professional Quantity Surveyors to carry out effective FAPCCC.

Keywords: construction cost, construction project, forensic framework, post contract

INTRODUCTION

The need to carry out forensic auditing is peculiar to accounting profession wherein an investigation is being carried out to uncover

fraudulent acts, misappropriation as a basis for prosecution in the law court (Fasua et al. 2016). The intent is to ensure probity in the operations of financial organizations (Fasua et al. 2016 cited Brown, 1962; Zimbelman and Albretch, 2012). Since quantity surveyors are saddled with financial probity of construction works (NIQS, 2020) the National Executive Council (NEC) 2017-2019 senate of the Nigerian Institute of Quantity (NIQS) advocated for forensic framework to uncover suspected fraudulent acts among construction stakeholders. Previous studies, Ojo (2019) cited Ajanlekoko (2017) agreed that prominent factors causing high cost of construction projects in Nigeria are due to financial missappropriation leading to corruption, kickback syndrome and quackery. Ojo (2019) in agreement with Ajanlekoko, (2017) recommended the engagement of ombudsman as independent assessor of cost of construction. Forensic auditing is to a large extent discourage or uncovered fraudulent acts in organizations (Usman et al. 2015). Previous studies (Fasuel et al. 2016) considered basic issues in forensic accounting and auditing and found that forensic accounting and auditing are intertwined, and that both require expertised knowledge and that professional accountants can carry out both audit exercises as well engage in preparation and presentation of financial statements at different categories. Usman et al. (2015) evaluated contract auditing practice in Nigerian building construction projects and discovered that the level of engagement of contract auditing practice at post contract stage is supreme and that inclusion of contract auditing as part of requirements of construction contract is expedient. This study tends to build on the work of Usman et al. (2015) and bridged the existing knowledge gap by developing a framework for carrying out forensic analysis of post contract construction cost. The questions that the study addressed include: Who initiates and carry out forensic analysis? what should form the basis for carrying out the analysis? when should the process starts and ends? how should the process be carried out? These questions of who, when, what and how are what the study anchored on. For adequate responses to the questions raised, the study developed forensic framework for post contract construction cost which was achieved through the following objectives:

- i. To identify the initiator(s) of forensic analysis of post contract construction cost (FAPCCC) and the forensic analyst;



- ii. To identify and evaluate the prerequisites for carrying out (FAPCCC);
- iii. To recommend procedure for carrying out (FAPCCC);
- iv. To develop a procedural framework to carryout (FAPCCC).

OVERVIEW OF FORENSIC AUDITING

Many definitions had been propounded for the term forensic. Common definitions are: forensic is “the use of scientific knowledge to legal problems in a court of law” (Singleton and Singleton, 2010). According to Zysman (2004), “forensic accounting involves the combination of accounting, auditing and investigative skills”. Crumbley (2006) simply puts forensic accounting as accounting that is suitable for legal review offering the highest level of assurance and including the now generally accepted connotation of having been arrived at in a scientific fashion. In Coenen (2005) point of view “forensic accounting involves the application of accounting concepts and techniques. It demands reporting, where the accountability or the fraud is established and the report is considered as evidence in the court of law or in the administrative”. Kehinde et al. (2016) defined forensic audit as “an investigation of evidence regarding an assertion or reporting to determine its assurance to established criteria carried out in a manner suitable to the court”. In essence, it is a procedure to lawfully establish the accuracy of accounting transactions in harmony with acceptable various standard of accounting, auditing and legal requirements and ultimately find out if any fraud has taken place. Usually, it is a practice for the management of financial organizations to schedule auditing annually. Besides the periodic call for auditing, many factors that triggered FA (Hopwood et al. 2013) include criminal investigation, investors cum partnership disputes, individual injury claims/motor vehicle accident, commercial disruption, fraud investigation, marital disputes that leads to a divorce, professional negligence among others.

Institute of company secretaries of india (2019) postulated the following steps as basis for carrying out forensic audit: “Begin the case (respond to complaint, etc.); evaluate the allegations or suspicions; conduct due diligence background checks; complete the internal stage of the investigation; check for predication and get organized; begin the external

investigation; prove illicit Payments; obtain the cooperation of an inside witness; interview the primary subject and prepare the final report. According to Home study centre (2020), benefits of forensic audit include: Means of minimizing losses; improved efficiency; reduced exploitation risk; avoidance of legal problems and improved brand reputation and authority.

RESEARCH METHOD

The research adopted positivistic approach. The research unit comprised of Quantity Surveyors (QSs) from various sector of practice namely; Academic, consulting firms, contracting firms and governmental organizations in the six-geopolitical zones of Nigeria. Quantity Surveyors are saddled with financial probity of construction projects, hence the reason for considering them as the target population. The choice of the entire geopolitical zones was to allow for representation from each of the zones thereby enriched the outcome of the study. A random sampling technique was adopted for distribution and retrieval of structured questionnaire as an instrument for data collection using online google form. This data collection method was preferred due to covid-19 pandemic that limited movement, prevalent of insurgency and banditry in many parts of the country, hence hindered one on one contact with the respondents. Data collected were analysed using frequency distribution and percentage through the aid of microsoft excel and the results presented in tables. The results were discussed and inferences were drawn to reach conclusion. The questionnaire was structured into four (4) sections namely: Background information of the respondents which provided insights into the geo-political location of the respondent, professional qualification, sector of practice and years of practice in the construction industry; section two (2) addressed the the initiator and prerequisites that neccessite carrying out forensic analysis of post contract cost; section three (3) validated the yardsticks for carrying out forensic analysis of post contract cost obtained from extant literature and section four (4) provided validated procedure for carrying out forensic analysis for post contract cost. *Objective one (1): To identify the initiator(s) of forensic analysis of post contract construction cost (FAPCCC)* was achieved by subjecting the primary data obtained from section two (2) of the questionnaire to frequency distribution. The



respondents were asked to indicate the level of their agreement with the identified potential initiator(s) and result presented in frequency table. *Objective two (2): To identify and evaluate the prerequisites for carrying out (FAPCCC).* The respondents were asked to indicate the level of their agreement with the prerequisites or factors that could necessitate carrying out forensic analysis of post contract cost using Likert's scale of (1-5). Scale 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree. *Objective three (3): To recommends procedure for carrying out (FAPCCC).* This was partly addressed by the structure questionnaire wherein the factors identified in objectives two (2) presented in sequence and respondents were asked to indicate their level of agreement using Likert's scale as earlier explained and *Objective four (4): To develop a procedural framework to carryout (FAPCCC).* A conceptual framework was formulated using both prerequisites or factors that mandate FAPCC and the process identified and validated.

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

This section presents step by step analysis and discussion of the objectives of the study preceded by the background information of the respondents.

Table 1. Background Information of the Respondents

<i>Geo-political zones</i>	<i>Frequency</i>	<i>Percentage</i>
North-West	6	13
North-East	0	0
North-Central	11	25
South-West	25	56
South-East	2	4
South-South	1	2
<i>Professional Qualification</i>	<i>Frequency</i>	<i>Percentage</i>
Probationer Members (Prob.NIQS)	13	29
Associate Members (MNIQS)	30	67
Fellows (FNIQS)	2	4
<i>Years of Experience</i>	<i>Frequency</i>	<i>Percentage</i>
<5	4	9
6 – 10	16	36

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11 – 15	15	33
16 – 20	5	11
21 and Above	5	11
Total	45	100%

Source: Field Survey, 2020

The study solicited responses from the Quantity Surveyors from six geopolitical zones but only five (5) out of the six (6) zones were represented. This could be as a result of using online google form as a tool for data collection due to covid-19 pandemic that restricted one on one contact, hence discouraged self administration of the questionnaire. The choice of zoning is to enriched the study by providing varieties of positions on the research subject on which a deductive conclusion can be based. South-West has the highest representation due to the concentration of Quantity Surveyors and Quantity Surveyors firms (QSRBN, 2020). Professional Qaulifications of respondents were considered to ascertain the reliability of the collected data. Associates members and fellows of Nigerian Institute of Quantity Surveyors (NIQS) represent 71% of the respondents the rest being probationers. It posited that most of the repondents must have gained cognate experience for atleast eight (8) years which could be considered as enough to contribute to the subject area. The years of experience of the respndents revealed that most of the respondents had experience of atleast six (6) years in the building industry which amounted to 91% of the population surveyed. The demographic factors considered indicate to a large extent the dependability of the evaluated data as indicated in the tables and discussions of the objectives of the study.

Objectives One: Initiator(s) of Forensic Analysis of Post Contract Construction Cost

Table 2. Initiator(s) of FAPCCC

<i>Initiator(s)</i>	<i>Level of Agreement</i>					
	<i>(5)</i>	<i>(4)</i>	<i>(3)</i>	<i>(2)</i>	<i>(1)</i>	<i>(N)</i>
1. Client	22	16	5	1	1	45
2. Project Manager	17	15	10	2	1	45
3. Project Financier Aside the client	21	21	2	0	1	45

Key: 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree
Source: Field Survey, 2020



An holistic evaluation of table 2 indicates the possible initiator(s) of FAPCCC. The respondents were asked to indicate level of their agreement with the supposition that client, project manager or project financier aside the client could initiate FAPCCC. From their responses, client was adjudged to be an initiator of FAPCCC with thirty-eight (38) out of forty-five (45) in support. Same position was taken by the respondents as regards the project manager. Thirty-two (32) out of forty-five (45) were in support of project manager calling for FAPCCC. Forty-two (2) out of forty-five (45) opined that for the project financier aside the client e.g TETFund to be an initiator of FAPCCC.

Taping from the common practice in many corporate organizations, the management initiates the carrying out of forensic auditing (Kehinde et al. 2016). The client, project manager and financier other than the client are also saddled with managerial responsibility to ensure the project is delivered to cost to optimal value for money. Some clients's organizations have crop of construction professionals performing project management functions. Higher institutions (Universities and Polytechnics) have physical planning units or department that represents the management interest, hence they could recommend FAPCCC to the management if need be.

Objectives Two: Identification of Prerequisites that Necessitate Carrying out Forensic Analysis of Post Contract Construction Cost

Table 3. Prerequisites that Necessitate Carrying out FAPCCC

Factors	Level of Agreement					
	(5)	(4)	(3)	(2)	(1)	(N)
1. Suspected fraud	22	19	1	3	0	45
2. Suspected collusion	17	22	3	3	0	45
3. Final account exceeded initial budget	22	16	6	1	0	45

Key: 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree
 Source: Field Survey, 2020

Table 3 presents the prerequisites that could call for FAPCCC. Three (3) possible causative factors were identified and subjected to evaluation. Suspected fraud which include misrepresentation of information was asserted by forty-one (41) respondents as possible red light that calls for

FAPCCC. In the same direction, suspected collusion and final account exceeded initial budget were also adduced to be prerequisites for carrying out FAPCCC. Thirty-nine (39) and thirty-eight (38) supported both stands respectively. The prerequisites for carrying out of FAPCCC agree with that of the study conducted by Kehinde et al. (2016) that opined financial fraud as a major pointer with the following variants; misappropriation of assets, corruption and financial statement fraud. In the same direction (Fasua and Osifo, 2016) asserted that individual, collusion of top managers, organized crime groups could be victims of financial frauds.

Table 4. Timing For Carrying out FAPCCC

<i>Timing</i>	<i>Level of Agreement</i>					
	<i>(5)</i>	<i>(4)</i>	<i>(3)</i>	<i>(2)</i>	<i>(1)</i>	<i>(N)</i>
1. After each interim valuation	22	19	1	3	0	45
2. Milestones	17	22	3	3	0	45
3. Anytime during the project as deem fit	22	16	6	1	0	45
4. After practical completion	22	16	6	1	0	45
5. Determination of contract	22	16	6	1	0	45

Key: 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree
Source: Field Survey, 2020

Table 4 indicates the timing for carrying out FAPCCC. The respondents were asked to express the best time to call for FAPCCC for a construction projects and to do this in terms of level of agreement as indicated in the key to table 4. For after each interim valuation, twenty-two (22) indicated strongly agree and nineteen (19) agreed cumulating to forty-one (41) out of forty-five respondents. The possible implication of this is that the client or the culprit may have to pay repeatedly for carrying out FAPCCC after each interim valuation which may be done severally during the project execution stage. For the milestone approach, seventy (17) indicated strongly agree and sixteen (16) agree totalling thirty-three (33) out of forty-five (45) that filled the questionnaire. The choice of milestone approach is contingent on the fact that some construction projects works are valued based on milestones covered by the contractor. Incidentally, The other timing factors which are: anytime during the project as deem fit, after practical completion and determination of contract all have similar responses. Twenty-two (22)



pitched with strongly agree and sixteen (16) each decided to go for agree. What could be deduced from all the responses is that, the timing for carrying out FAPCCC could be determined by clients' choice, project manager and financier, and that could be no fast rule as to definite timing. An examination of financial auditing in organization favours periodic (end of the accounting year). However, occasions could call for auditing other than the conventional timing if fraud is suspected. This aligns with carrying out FAPCCC anytime as deemed fit as revealed by the respondents.

Table 5. Commissioning For Carrying out FAPCCC

Forensic Auditor	Level of Agreement					
	(5)	(4)	(3)	(2)	(1)	(N)
1. Any consultant Qs firms	22	19	1	3	0	45
2. Recommended Qs firms by NIQS/QSRBN ¹⁷	22	3	3	0	0	45
3. Collaboration of consultants Qs firms	22	16	6	1	0	45
4. Any individual Qualified Qs	22	16	6	1	0	45

Key: 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree
 Source: Field Survey, 2020

Table 5 reveals the categories of professional Quantity Surveyors that could be engaged to carry out FAPCCC. While the respondents agreed that all identified categories could be engaged, consultants Quantity Surveying firms seem to be mostly favoured as the most appropriate categories of Quantity Surveyors to be commissioned to carry out FAPCCC. Previous studies (Usman et al. 2015; Fasuel et al. 2016) disclosed that most companies or organizations, engage auditing firms to carry out end of the year auditing and reporting and most cases engage a forensic specialist to carry out a forensic auditing to uncover suspicious or alleged misappropriation. In all, the engagement of a specialized firm stands out. In the same vein, Qs consultancy firms seem to be mostly favoured by the respondents. Cooperate organizations and institutions may likely prefer the option of Qs firms for carrying out FAPCCC because of perceived pedigree of such firms.

Table 6. Inclusion of FAPCCC Clause in Letter of Award and Commissioning

	<i>Level of Agreement</i>					<i>(N)</i>
	<i>(5)</i>	<i>(4)</i>	<i>(3)</i>	<i>(2)</i>	<i>(1)</i>	
1. Letter of Award	22	16	3	3	1	45
2. Letter of Commissioning	18	22	3	1	1	45

Key: 5=Strongly Agree, 4=Agree, 3=Uncertain 2=Disagree, 1=Strongly Disagree
Source: Field Survey, 2020

Table 6 indicates the respondents positions as to inclusion of FAPCCC clause in the letters of award and commissioning that indicates that the FAPCCC could be initiated at anytime during the project execution. Supposedly, this is to serve as deterrent for any intended misdeed at both pre and post contract stages. For letter of award, twenty (22) stringly agreed and sixteen (16) agreed totalling thirty-eight (38) that are in agreement with inclusion. This posited that, majority are in support of the inclusion FAPCCC clause in the letter of award. For the letter of commissioning for the consultants, eighteen (18) strongly agreed and twenty-two (22) agreed, amounted to forty (40) out of the total forty-five (45) respondents.

Table 7. Remuneration of Forensic Analyst

<i>Modalities</i>	<i>Frequency</i>
1. Negotiation	20
2. As deem fit by the engaged entity	6
3. NIQS Scale of fees	19

Source: Field Survey, 2020

Table 7 shows the divergent views of the respondents as to the modalities of remuneration of forensic analyst. Twenty (20) abide with negotiation approach, six (6) went for as deem fit by engaged entity and nineteen (19) preferred using NIQS scale of fees as basis for payment for the services rendered by by forensic analyst. Though, most of the respondents preferred negotiated approach, the posits that each engaged entity is at large to charge as deem fit. The scale of fees produced by NIQS at this time may not adequately cater for this supposedly evolving aspect of Quantity Surveyors services. Most of the respondents agreed that the culprit should be mandated to pay for the remuneration of the forensic analyst, forty (40) respondents were in agreement. When inquired



whether forensic analysis is an innovation in Quantity Surveying profession, forty-one (41) out of the forty-five (45) respondents concurred.

OBJECTIVES THREE: *Establishing Procedure For Carrying Out (FAPCCC)*

The study identified vital components that could be essential in carrying out FAPCCC. Some of this components were obtained from literature and some are suggestive. To establish the procedure, the study recommends a sequence for carrying out FAPCCC. The postulated phases by the study was subjected to validation process. Respondents were asked to express the extent of their agreement with the postulated phases of FAPCCC clockwise commencing from initiation and followed by commissioning, evidential, decision to or not to proceed, planning stage, information gathering and processing, reporting and decision to prosecution or not stage. Nineteen (19) strongly agree and twenty-one (21) agree totalling forty (40) out of the forty-five (45) respondents. This implies that 89% agreement validated the process to be acceptable and could be adopted as conceptual framework for carrying out FAPCCC. The study therefore postulates the procedural conceptual framework as indicated in figure 1.0.

Objectives Four: *Developing A Framework to Carryout Forensic Analysis of Post Contract Construction Cost*



Figure 1:0. Forensic Framework for Post Contract Construction Cost (FFPCCC)

Field Survey (2020)

INITIATION PHASE

This phase addresses the research question of who initiates the carrying out of FAPCCC. The study revealed that any of, the client, project manager or financier if not the client can kick starts the process.

COMMISSIOING PHASE

In this phase, the initiator(s) send an official correspondence to a selected entity which in most cases as indicated in the study, a Qs firms either selected by the initiator(s) or recommended and the choose of an independent professionally qualified Quantity Surveyor is not left out. The written firm or indidividaul as the case maybe, shall communicate back accepting or rejecting the offer. If rejected another firms or entity could be contacted.

EVIDENTIAL PHASE

The commissioned entity seeks to unravel suspected fraud, collusion and to ascertain cost over-run without increase in scope of work. If any of the



above or other factors as deemed fit by the entity to warrant the continuation of forensic analysis.

DECISION TO OR NOT TO PROCEED PHASE

The determinants to to proceed or stop at this stage depend solely or the discovery at evidential stage. If any of the factor(s) identified to necessitates is/are found, then the process progresses to the next stage which is planning stage, But if none of these factors presents itself, then, the process end here.

PLANNING PHASE

The planning stage provides the outline on the time frame to complete the forensic analysis and report back to the initiator. These include, what, when, who and how to carry out the work.

INFORMATION GATHERING AND PROCESSING PHASE

This phase provides details information about the extent of misdeed that warrant FAPCCC. The nature, when, how, who is responsible for the misdeed would be unfolded. The documents that could provide evidence of any of the prerequisites to warrant FAPCCC include: Contract award letter, Contract documents, Interim valuations, Architect or engineer's instructions, extract of site meetings etc

REPORTING PHASE

The reporting phase provides the details of the FAPCCC for the use of the initiator to make decisions to or not to prosecute. The content of the report is subjective depending on the factor that lead to carrying out FAPCCC and other factors that may be peculiar to the client organization or the entity consulted to carry out the FAPCCC. The work of the consulted Qs firm or an independent Qs ends here if the decision is not to prosecute.

DECISION TO PROSECUTE OR NOT

At this phase, the initiator decides to or not to prosecute the culprits. The decision depend on the following inexhaustive factors: Relationship of the perpetrator(s) and the initiator, extend of the misdeed, intention,

regularity etc. The FAPCCC process end at this stage. But if the client chooses to prosecute the offender, the forensic analyst can be engaged to provide credence to the report in the law court as an expert witness.

CONCLUSION AND RECOMMENDATION

This study developed forensic framework for post contract construction cost. The study identified the client, project manager and financier other than the client as initiators of FAPCCC. Prerequisites for carrying out FAPCCC include suspected fraud, suspected collusion and when the final account exceeds initial budgets without increase in scope of the project. Most of the respondents align with carrying out FAPCCC after each interim valuation but also agreed with other options of milestones, as deem fit, when the project is determined and after practical completion. In essence, any of the timing can be adopted as when FAPCCC should be carried out. The categories of Quantity Surveyors agreed upon to carry out FAPCCC include consultant Qs firms (either chosen by the initiator or recommended by professional or regulatory body e.g NIQS or QSRBN), collaboration of Qs firms and any professionally qualified Qs. Most of the respondents asserted that inclusion of FAPCCC clause in letter of commissioning and award could discourage intended misdeed. The options for remuneration of forensic analysts involve negotiation as the most preferred, follow by using NIQS scale of fees and the one least considered is as deem fit by the engaged entity. The culprit shall be accountable for payment of the engaged forensic analyst. Forensic analysis is considered by the majority of the respondents as an new innovation in the field of Quantity Surveying. The study thereby postulated a procedural conceptual framework for carrying out FAPCCC after validation of the stages considered as the basis for the framework. Due to Covid-19, the number of respondents for this study is relatively small compared to the number of Quantity Surveyors in Nigeria. A larger study population could provide robust responses which could enhance the reliability of the outcome of the study. Further study could be carry out to investigate the suitability of FAPCCC for various procurement system.



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