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An Assessment of contract auditing techniques of construction projects in Anambra state, Nigeria

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Abstract:
Background*: Construction auditing is an objective forensic accounting, financial, performance and technical exercise, conducted on a construction project aimed at ascertaining and evaluating the evidence of assertions on economic, professional actions and events on the project and its stakeholders. The aim of this study is to evaluate contract-auditing techniques of construction projects in Anambra state, Nigeria.*
Materials and Methods*: The research method used for this study is the descriptive survey method; review of past relevant literature was undertaken. Population of study is eighty-nine (89), while seventy-three (73) questionnaires were distributed to respondents for this study. Sixty (60) of the questionnaires were duly completed and returned. Data were collected with the aid of well-structured questionnaires administered on construction professionals. The data generated were further analyzed using descriptive statistical tools such as percentages, frequencies and mean index score (MIS).*
Results*: This study identified insuring accountability and probity, checking accountability and probity and to ensure the compliance of all practice and procedures as the benefits for its application in construction projects. It also identified lack of government and legislative support, lack of public awareness and institutional acceptance as the emerging precincts affecting construction contract audits and its practice.*
Conclusion: *It concluded that construction contract auditing is an essential project control tool and its practice require a broader understanding among stakeholders in the construction industry. The study also recommended that contract-auditing techniques should be adopted by all construction projects professionals in the construction industry and government through legislation should incorporate construction contract auditing as one of the requirement in carrying out construction projects.*
Keywords*: Contract, Contract Auditing, Construction Projects, Nigeria.*

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I. Introduction

The growth of an economy depends to a large extent on the rate at which investments are made in the economy especially in the growth inducing sectors of a developing economy like Nigeria. Investment in the economy in form of capital projects are strategic to sustainable economic growth and development. Due to very huge capital outlay required for execution and realization of these capital projects and their nature, in the opinion of [1] account for their vulnerability to corrupt manipulations. Infact, the 2008 Transparency international bribe payers survey ranked public works and construction as the most corrupt sector of all economies. Consequently, in a construction project, where it is desired to efficiently manage earned values and avoid the effect of corruption on project costs in order to fulfill the desires of the client.

Cost is one of the major issues to be considered throughout the life of a project because it is a prime factor of project success [2]. [1] recommends the appointment of an independent cost/construction contract expert, to review all payment valuations to ensure that the terms and conditions of the building or other construction outputs are properly implemented to avoid cost manipulations for corrupt purposes. This operation to be carried out by an independent cost/construction contract expert is known as construction contract auditing.

Contract auditing is a meticulous study of processes and procedures involved in a project execution with a view to discovering their compliance with international best construction practices and predetermined plan. A practice that is not only corruption free but also has zero tolerance for this devastating menace [3]. Construction contract auditing is a popular aspect of services in the construction management and engineering industry as a service support and purposed operation. Although not enjoying outstanding recognition in the Nigerian construction industry as compared to other aspects of services operating in project management, construction managers have always tried to ensure project success through accountability and technological innovations. This study therefore will seek to evaluate contract auditing practice of construction projects in Anambra state.

II. Statement of Problem

The desire of construction clients in Anambra state to complete their projects on time within budgeted cost and required quality standard has not changed over time but poor management of project cost has become a serious challenge occasioned by poor cost performance of construction projects; which has left construction clients unsatisfied and subsequently seeking ways to keep project cost within or close to budgeted cost. Anambra state is a commercial hub with significant population of traders and businessmen forming a majority of private sector clients; whom have been known to use any possible means available to reduce building cost even when it results to construction of substandard buildings. Government projects are not spared either with huge amount of taxpayer's money being expended on projects whose cost continues to grow at an upward trajectory.

Construction costs can vary throughout a project and without proper controls, can quickly spiral out of control thereby leading to contractual disputes. Some private sector clients around Nnewi and Onitsha axis have been known to directly take over construction of their projects from already engaged contractors as their own way of mitigating the above challenge. Similarly, Construction projects delay (time overrun) has continued unabated with clients unable to take possession or make use of their structures as at when required, thus increasing cost and preventing them from pursuing new opportunities. Increasing number of construction projects are not meeting the quality standard for which they were conceived and this has made it impossible for clients to derive optimum value from the physical products of the construction process. This is particularly evident with the increasing number of collapsed building witnessed last year around Awka and Onitsha axis of Anambra state. This at times leads to abandonment of projects. Abandoned projects have become a recurring challenge in the country and Anambra state is not an exception. These abandoned projects includes both public and private sector owned; representing a waste of economic resources.

Poor planning and accountability is also a challenge with building clients reluctant to engage qualified professionals from the inception to completion of the construction process. This research work will find out how contract auditing practice can be used to mitigate the above challenges.

III. Aim and Objectives of the Research

The aim of this study is to evaluate contract-auditing practices of construction projects in Anambra state. The specific objectives for achieving the aim of this study are as follows:

1) To identify the benefits of carrying out construction contract auditing practice in Anambra state.
2) To identify the challenges affecting construction contract auditing practice in Anambra state.
3) To identify the most effective approach to achieving standard construction contract audit.

IV. Literature Review

A. Concept Of contract Auditing

The word audit is derived from a Latin word "audire" which means "to hear". [4] defines audit as an official examination of business and financial records to see that they are true and correct. According to [5] an audit is a planned and documented activity by qualified personnel to determine by investigation, examinations or evaluations of objectives evidence, the adequacy and compliance with established procedures, or applicable documents and effectiveness of implementation.

[6] described construction auditing as an objective forensic accounting, financial, performance and technical exercise, conducted on a construction or an engineering project aimed at ascertaining and evaluating the evidence of assertions on economic, professional actions and events on the project and its stakeholders. It involves the determination of the effects of the actions and events on the project and communicating them to interested stakeholder in a more professional and structured manner in line with best industry practice. Similarly, [7] described contract auditing as a particular kind of investigation, which is performed by a specialist auditor and consultants, if properly performed, it provides an opportunity to assess the management and control the contract, especially if the process begins during the pre-construction and early construction stages and extends to a post-completion review and verification. It is also the meticulous study of processes and procedures involved in a project execution with a view to discovering their compliance with international best construction practices and predetermined plan [8]. It involves careful ordering of facts obtained from relevant contract documents (drawings, bills of quantities, specification, schedule of rates etc), claims, relevant correspondence that relates events or gives instructions and field study carried out on the project.

[1] posited that the main purpose of contract auditing is to discover whether the contract transaction was transparent or there was corruption involved. It is expected of the contract auditor to prepare a report that captures the exact state of the contract transactions so that relevant authorities can take necessary steps. Construction contract audit therefore is an essential internal control process to maximize capital program

effectiveness. It is usually done with the aim of building public and investor confidence in the construction or built environment.

B. Types of auditing techniques in the construction industry

a) Financial/Cost Auditing:

Financial audits include financial statement and finance-related audits. This is undertaken to verify and establish the justifiability or not of contract rates and contract sums, payments, claims and cost estimates of construction works in line with contract conditions and best construction practices [3]. It involves diligent examination of all financial transactions and documents.

b) Performance Auditing

This provides an independent assessment of performance, with the purpose of determining how well established goals and objectives are being achieved and with the additional objective of identifying opportunities for improvement. Performance audits may include functional audits for economy and efficiency, evaluating the planning process, space use, staffing and established procedures. A performance audit for a construction program will typically combine an in-depth review of expenditures with an analysis of compliance with applicable laws and funding requirements, and may also include an examination of the program management plan and its effectiveness as practiced.

C) **Environmental Sustainability Auditing**

[8] suggested that environmental sustainability auditing is an accounting of the quantifiable environmental factors that will be incurred in the production and use of a building. It is usually carried out to ascertain the eco-friendly dimensions of the construction design factors, variables and decisions. Such audit must include the energy and no energy supply and consumption related factors of the existing buildings and their occupants. A conscious attempt must be made to reduce emissions of carbon oxides, oxides of sulphur, air, water and solid waste, impacts of material processing, handling, depletion of limited reserves of non-renewable within the building environment. Other dimensions of environmental sustainability audit include the minimization of damage to terrestrial and aquatic habitats, production of hazardous wastes with long term consequences on construction project activities among others [9] and[10].

d) **Health and Safety Auditing**

It is paramount in the face of the current high records of accident and injuries in the construction industry. There seems to be a lack of regards to health and safety issues at both organizational and project levels. The above has painted a gloomy picture concerning its safety record as regards the industry. Despite the fact that prior studies have contributed significantly to both safety performance and evaluation techniques such as accident rate, incidence rate among others, there is still the need for more innovative and scientific techniques to manage and measure the health and safety dynamics of the construction industry. It is important to incorporate health and safety audit as part of the construction project management function. This must start from the project inception to completion and its usability stages.

e) **Technical Auditing**

Technical auditing involves the logical evaluation of construction works based on a stated goal to establish whether all the necessary anticipated attributes, design variables and user parameters have been followed or fully complied with as planned. It involves the verification of contract documentations and existing project features evidence. The results are often an opinion based on persuasive evidence within and outside the project environment. It will usually depend on the availability of pre-contract, construction and post construction contract documentations. [12] suggest that the professional technical auditor in the case of a construction project should have and attain an independent status, free from investigation and reporting constraints to produce results that will benefit stakeholders in a convincing manner

C. Significance of construction contract audits in Nigeria construction industry

Contracting auditing practice must aim at discovering the effect of the actions and events on the project and collaborating the results to interested stakeholders. It is a means to create awareness, develop skills, integrate knowledge, upgrade the technicality, increase profitability, productivity and improve an organization working environment. Client organizations that institute contract auditing as part of their project management function could recoup and avoid overcharges on their construction project. It will also help them and the industry develop a control system to save cost on future projects in the country. The practice of contract auditing will give additional financial and management control over the client and in the case of Nigeria, because it is an independent third party review of the construction process, it will give project investors and donors as it pertains to government projects an assurance that their money is being used wisely. The early involvement of technical auditors on a construction project will yield some savings than involving them at contract close-out stages. It will also help both client and main contractor determine their risk and rights under the contract.

The adoption and practice of contract auditing offer some benefits to the Nigerian construction industry which include value for money, regulatory and legislative compliance, minimization of risk, quality assurance and efficient management of projects in line with best practice. The practice of contract auditing will also ensure accountability, thereby providing stakeholders with a means to trace construction and activities of professionals in the Nigerian construction industry. Accountability in the context of construction depends on the proper identification, authentication and assessment of well-established benchmarks within a construction environment. This will enable construction managers and other stakeholders in Nigeria, particularly clients to appreciate the various roles and types of transactions associated with each cost components and activities of the project. It will be of immense benefit if the content and environment of construction is audited to ensure all the necessary design and end-user dimension variables are met. Contract auditing and its practice must be technically acceptable within the scope and limits of the project site information and prevailing technical understanding [14].

V. Method of Data Analysis

The research design that was used for this research work is the descriptive survey method. The study was carried out in Anambra state, located in southeast geopolitical zone of the Federal Republic of Nigeria; with greater focus on Awka, Nnewi and Onitsha which are the three major towns in the state and representing one town each from the three senatorial zones of the state.

To meet the objectives of our study, a questionnaire was developed. The survey determined that a total of eighty-nine professionals/experts comprising thirty-five (35) in ministry of Housing, twenty (20) in Anambra State Housing Development Corporation, twelve (12) in Awka Capital Development Authority and twenty-two (22) in Anambra State Physical Planning Board. Available records from the accounts and administrative offices of these ministries and parastatals, the population of professional staff concerned with this study in 2019 stood at 89. The population for this study encompasses 89 professionals (Architects, Builders, Engineers and Quantity Surveyors). This research work employed the use of purposive type of sampling in selecting the professionals from the target population of 89. This is a type of non-probability sampling technique where the researcher selects units (people, cases/organizations, events) to be investigated based on their knowledge and professional judgment.

Cochran (1977) return sample size method was employed to determine the appropriate sample size for this study. Cochran′s formula is represented as:

$$n_0 = \frac{z^2 \times p \times q}{(d)^2}$$

Which is valid where n_0 is the sample size, Z^2 is the abscissa of the normal curve that cuts off an area α at the tails (1 – α equals the desired confidence level, e.g., 95%) 1, e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is 1-p. The value for Z is found in statistical tables which contain the area under the normal curve.

Thus, the sample size $n_0 = \frac{1.98^2 \times 0.5 \times 0.5}{(0.05)^2}$ =385

Therefore, using Cochran's correction formula, $n = \frac{n_0}{1+\frac{(n_0-1)}{N}}$

$= \frac{385}{1+\frac{(385-1)}{89}} = 73$

The sample size of 73 professionals was adopted for this study.

However, 60 respondents returned their questionnaires showing a response rate of 82.19%.

All the variables of the research model were measured using Likert type scale. All the utilized scales exhibited an adequate level of reliability exceeding the value of 0.7 in all the studies that the scales were taken from. A convenient sample size of 300 respondent from the different construction firms in Enugu state was used. Respondents were professionals in the construction industry who have the best knowledge about the total quality management. Data collected for this study were analyzed using SPSS version 22. Data was presented in form of tables, graphs and charts, percentages, mean and presented in tables.

VI. Analysis and Discussion of Results

Table 1: Demographic profile

	Variables	Frequency	Percentage
Professional affiliation	Architect	15	25
	Builders	13	22
	Engineers	10	17
	Quantity Surveyors	22	36

Total		60	100%
Working experience	0-5yrs	19	32
	6-10yrs	25	41
	11-15yrs	9	15
	Above 15yrs	7	12
Total		60	100%
Academic qualification	Hnd	22	36
	B.sc/B.Tech	13	22
	Pgd	13	22
	M.SC/M.Tech	7	12
	Ph.D	5	8
Total		60	100%
Highest estimated contract sum of construction project executed	Below 100m	8	13
	10-50m	2	4
	50-100m	5	8
	Above 100m	45	75
Total		60	100%
No of Construction projects handled	1-5	12	20
	5-9	11	18
	11-15	7	12
	16-20	13	22
	Above 20	17	28
		60	100%

In table 1 above, there are 60 respondents. Row 1 shows professional affiliation of the respondents. The distribution shows that; Fifteen (15) respondents representing 25% of sample population are Architects, thirteen (13) respondents representing 22% of sample population are Builders, ten (10) respondents representing 17% of sample population are Engineers 17%, while remaining twenty-two (22) respondents representing 36% of sample population are Quantity Surveyors respectively.

Row 2 shows the work experience of the respondents. The distribution indicates; nineteen (19) respondents representing 32% of sample population has 0-5years working experience, twenty-five (25) respondents representing 41% of sample population has 6-10 years' experience, nine (9) respondents representing 15% of sample population has 11-15years working experience, while the remaining seven (7) respondents representing 12% of sample population had over 20years experience.

Row 3 shows the academic qualification of the respondents. The distribution is as follows; twenty-two (22) respondents representing 36% of sample population are HND holders. Thirteen (13) respondents representing 22% of sample population are Bsc/BTech holders. Thirteen (13) respondents representing 22% of sample population are PGD holders. Seven (7) respondents representing 12% of sample population are MSc/MTech holders while the remaining five (5) respondents representing 8% of sample population are Ph.D. holders.

Row 4 shows the highest estimated contract sum of projects handled by respondents. The distribution indicates; forty-five (45) respondents representing 75% of sample population handled or participated in projects costing over ₦100m. Five (5) respondents representing 8% of sample population handled or participated in projects costing between ₦50m - ₦100m. Two (2) respondents representing 3% of sample population handled or participated in projects costing between ₦10m – ₦50m. While the remaining eight (8) respondents representing 13% of sample population handled or participated in projects above ₦10m.

Row 5 shows the number of construction projects handled by respondents. The distribution is as follows; twelve (12) respondents representing 20% of sample population handled or participated in projects ranging from 1 to 5. Eleven (11) respondents representing 18% of sample population handled or participated in projects ranging from 6 to 10. Seven (7) respondents representing 12% of sample population handled or participated in projects ranging from 11 to 15. Thirteen (13) respondents representing 22% of sample population

handled or participated in projects ranging from 16 to 20, while the remaining seventeen (17) respondents representing 28% of sample population handled or participated in projects above 20.

Part B - Evaluation of Contract Auditing techniques

A. Using a score of 1 - 11, rank the importance of each of the following benefits for carrying out contract auditing practice of construction projects.

Table 2: Importance of the benefits for carrying out contract auditing techniques of construction projects.

S/N.	Reason for carrying out contract auditing	∑Fx	Mean Score	Ranks
1	To ensure the compliance of all practice and procedures	216	8.31	3rd
2	To ensure accountability and probity	233	8.96	1st
3	To check and prevent corruption	223	8.58	2nd
4	To minimize cost overrun	201	7.75	5th
5	To checkmate unnecessary claims by contractors	188	7.23	7th
6	To ensure policies adherence to best practice in contract procurement and management	158	6.08	10th
7	To understand the control environment of a project	145	5.58	11th
8	To ensure efficiency, economic consistence and standard to actualize targeted quality	204	7.85	4th
9	To analyse areas where problems are identified and improve on future contracts	174	6.69	9th
10	Evaluate to understand performance opportunities, penalties, incentives, rights and obligations	193	7.42	6th
11	To prevent project failure caused by cost and time overrun	167	7.19	8th

Table 2 shows respondents' view on the importance for carrying out contract auditing techniques of construction projects. From the table, the major reason identified for carrying out contract auditing techniques is the need to ensure accountability and probity

B. Using a Linkert scale of 1-5, indicate the severity of the following factors affecting the practice of construction contract auditing in the construction industry

Table 3: Severity of factors affecting the practice of construction contract auditing in the construction industry.

Factors	Very High (5)	High (4)	Average (3)	Low (2)	Very Low (1)	∑Fx	Mean Score	Ranks
Lack of public awareness and institutional acceptance	45	4	3	3	5	261	4.35	2nd
Political and financial constraints	38	10	4	8		258	4.3	3rd
Misunderstanding of contract auditing concepts		4	38	12	6	160	2.67	6th
Lack of commitment	33	15	7	1	4	252	4.2	4th
Lack of skills and professionals	17	28	12	3		239	3.98	5th
Lack of government and legislative support	44	12	1	1	2	275	4.58	I st

Table 3 shows respondents' view on severity of factors affecting the practice of construction contract auditing in the construction industry. From the table, lack of government and legislative support was identified as the major factor.

C. Using a Linkert scale of 1-4, indicate the severity of Effective approach to achieving standard construction contract audit.

Table 4: Shows Effective approach to achieving standard construction contract audit.

Effective approach to achieving standard construction contract audit.	SR (4)	R (3)	U (2)	NR (1)	∑Fx	Mean Score	Remark
Engagement of a construction contract auditor for private sector projects	36	14	7	3	203	3.38	Recommended
Making construction contract auditing a statutory requirement for every public sector construction project.	41	14	5	-	216	3.60	Recommended
Specialized training of construction contract auditing.	25	22	11	2	190	3.17	Recommended

***Where SR is Strongly Recommended; R is Recommended, U is Unsure and NR is Not Recommended**

Table 4 shows respondents' view on effective approach to achieving standard construction contract audit. From the table above, it shows that engagement of a construction contract auditor for private sector projects, making construction contract auditing a statutory requirement for every public sector construction project and specialized training of construction contract auditing were all recommended. This is because all the mean scores are above average.

VII. Conclusion and Recommendation

Conclusion

This study-evaluated contract auditing techniques of construction projects in Anambra state, Nigeria. Construction contract auditing is a valuable tool that helps to achieve essential projects control and optimum project delivery. The benefits for its application in construction projects include to ensure accountability and probity, to check accountability and probity and to ensure the compliance of all practice and procedures. The inherent factors affecting the practice of construction contract auditing in the construction industry include lack of government and legislative support, lack of public awareness and institutional acceptance. Others include Political and financial constraints, lack of commitment, lack of skills and professionals and misunderstanding of contract auditing concepts. However, the various effective approach to achieving standard construction contract audit include engagement of a construction contract auditor for private sector projects, making construction contract auditing a statutory requirement for every public sector construction project and specialized training of construction contract auditing.

Recommendations

This study recommended the following:

There is need for establishment of audit units on large projects; establishment of professional standards and conduct on audit works, training, adequate resource allocation, expanding the reporting arrangements and broadening the mandate of auditors to make them more responsible for project performance assessment. Furthermore, There contract auditing techniques should be adopted by all construction projects professionals in the construction industry. Government through legislation should incorporate construction contract auditing as one of the requirement in carrying out construction projects.

However, this study is limited to practicing professionals operating within institutions, agencies amd ministries in Anambra state. Further studies needs to be carried out in a wider perspective in order to assess the perception of contractors, clients and other professionals in both private and public sectors on contract auditing practice, of which the findings may give room for the development of a more suitable construction contract auditing framework.

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