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UTILIZATION OF QUANTITY SURVEYORS' SKILLS IN CONSTRUCTION INDUSTRY IN SOUTH EASTERN NIGERIA.

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Abstract: Quantity Surveyors are professionals who have been trained as construction cost consultants. They are the accountants in the construction industry. They can as well be referred as construction economists or cost engineers. They are in charge of planning and managing costs for construction projects from the start of a project to its completion.
The high construction cost in Nigeria is quite alarming. The south eastern states of Nigeria are worst hit which call for assessment. The aim of this work is to ascertain the effect of the utilization of the services of Quantity surveyors in project execution in South east Nigeria.
This was carried out by providing vital information on a general overview of the quantity surveyors roles to achieve the best quality and value within the client's specifications.
Oral interview, literature review and investigative method of data collection were adopted. The result was presented using descriptive method of charts and tables.
Finding revealed that there are many qualified quantity surveyors at every work categories in the region; the skills of these professionals are not well utilized. The region cost of project execution is arbitrarily higher due to poor or no documentation, inaccurate quantities and corruption.
It is recommended therefore that the skill of Quantity surveyors should be sought by the government and the private sectors (developer & contractors) in the south east to increase profit, ensure risk reduction, capital flight and improve the dwindling contribution of the sector to the region's economic growth.
Key words: Quantity Surveyors, Utilization, Construction industry, Projects.

INTRODUCTION

Background

An understanding of the implications of a construction cost at a project design decisions at an early stage ensure that good value is obtained for the money to be expended. Traditionally Quantity Surveying is concerned with contracts and costs on construction projects and quantity surveyors control construction costs by accurate measurement of the work required. These methods, however, cover a range of activities which may include value management, tendering, valuation, change control, claims management and cost estimation. The quantity surveyor facilitates the design process by systematic application of cost criteria so as to maintain a sensible and economic relationship between cost, quality, utility and appearance which thus helps in achieving the client's requirements within the agreed budget.

A construction project is a complex net of contracts and other legal obligations, each of which must be carefully considered. In its simplest form a contract may be an oral agreement, and for most projects, printed standard forms are used as the basis of the contract in order that all parties may have a clear picture of their rights and obligations. It is recognized that surveyors are now playing a more important role in the area of contract administration and all aspects of the surveyor's professional work relate directly or indirectly to construction work of all kinds (Rabie; Habib, 2011). Construction projects are complex because they involve many human and non-human factors and variables. They usually have a long duration, various uncertainties and complex relationships among the participants. The need to make changes in a construction project is a matter of practical reality. Even the most thoughtfully planned project may necessitate changes due to various factors.

The Quantity surveyor has traditional independent role in the team comprising client, architect, engineer and contractor combined with expertise in drafting and interpretation of contract documents to avoid disputes and ensure the effective progress of a project. The Quantity Surveyor is one of a team of professional advisers to the construction industry. Quantity Surveyors estimate and monitor construction costs, from the feasibility stage of a project through to the completion of the construction period. They work closely with architects, financiers, engineers, contractors, suppliers, project owners, accountants, hosting communities, insurance underwriters, and solicitors and with all levels of government authorities. Quantity Surveyors measure the quantity of materials and labour needed for a project, measured from drawing for use by contractors and developers for tendering, progress payments, variations and valuation.

Who is a Quantity Surveyor?

The quantity surveyor is the person responsible for figuring out just what a construction project is going to cost. They have other roles too, especially making sure that construction costs and production are managed as efficiently as possible. Quantity Surveyor is an expert that is concerned with financial probity in the conceptualization, planning and execution of building, civil and heavy engineering projects. Quantity surveyors are the financial managers that bring the conception of Architects and Engineers to cost reality. They are however professionally trained, qualified and experienced in handling challenges regarding construction in terms of; cost, management and communication (Nnadi & Igweonyia, 2014).

Quantity surveyors have this title because they prepare a 'schedule of quantities' — estimates of the material and labour costs—that contractors' tenders can be measured against. (However, contractors are not selected for cost alone.) The schedule is also called a cost estimate.

Other names for people employed with quantity surveying qualifications include estimator, cost engineer, cost manager, cost analyst, project coordinator, project cost controller and cost planner.

Classification of quantity surveyors

Quantity Surveyors have expert knowledge on costs, values, labour and material prices, finance, contractual arrangements and legal matters in the construction filed" (HKIS, 2004). Based on this knowledge, Quantity Surveyor can work in private developers, Government departments, contractor, mining and petro-chemical companies, research institute and insurance companies to provide services. In line with their area of work, there are classified into three (3) categories:

Client's Quantity surveyor

Quantity surveyors in consulting firms are regarded as the client's quantity surveyors. They are regarded as such because they work for private practices acting on behalf of clients to advice on the financial commitment of the project as well as protecting the clients' interest which should be his number one priority. The Guide for Quantity Surveying Appointments (2006) states that "any client who is considering building any structure of any size, changing an existing structure or investing in construction projects no matter how simple or complex, needs the expert advice of a professional quantity surveyor for establishing budgets, cash flows, cost planning, cost management and obtaining value for money."

It is essential for the client to engage the services of a quantity surveyor from inception stage of a project in this way, his advice can be provided on such issues as: the costs involved in the project (in terms of meeting the client's budget), the best procurement route to choose according to the client's requirements and the selection of others consultants and contractors. Quantity surveyors working in the ministry, public and civil services fall under this category.

Contractor's Quantity surveyor

As a result of technological, financial and economical influences the methods adopted for construction work are varied and complex and the expert advice of a quantity surveyor should be obtained before the start of any project planning. This is the main reasons why there is a need for the services of a quantity surveyor. (Bowles & Le Roux, 1992)

Contractor's quantity surveyor is employed solely to project the interest of the contractor. According to Onovoh (1997), his functions mainly post contract administration matters bothering on initiation and submission of claims in all its ramifications. He also performs other administrative duties that will extricate the contractor from claims for damages from the contract.
Similarly, Cornick and Osbon (1994) identified seven main functions for the contractor's quantity surveyor namely: valuation of work completed for payment from client and payment to subcontractor, determination of change due to variation from client or designer, preliminaries allocation, subcontractor accounts to agree tender and actual costs, financial reporting for quarterly account forecasts, cost accounting for plant and material use by company, cost accounting for labour use by the company.

Educators' Quantity surveyors
These are the group of Quantity surveyors that are involved in the research and development. The consultancy and contracting units of the profession depends on this group of profession because of new discovery, findings and update which improve the value of the profession. The academician (lecturers and tutors) in the universities, polytechnics and the professional institute belong to this category. They can also be referred to as value added Quantity Surveyors.
Meanwhile, there is no restriction to them appearing as a client QS or standing in to solve a contractor's problem or as arbitrator. Their involvement is essential to test their new findings on the field before documentation of such.

Quantity surveyors' main roles are:
- Given a cost advice to the client/developer/employer
- Managing the finances for any kind of construction project (building, civil or industrial engineering)
- Ensuring the project's time is actualized.
- Making sure the project is kept within the agreed budget
- Effective management of project risk
- Preventing or resolving disputes between contracting parties.
- Preparing insurance replacement estimates for all kinds of buildings, including houses.

Before the project, the quantity surveyors calculate a budget based on the client's requirements. They prepare detailed estimates are to ensure the budget is sufficient for each stage of construction. Ashworth and Hogg (2007) stated that the traditional role of Quantity Surveyor is still practiced on small to medium sized projects. This is because of the hostility from other professional members in the industry. Furthermore, some core services of Quantity Surveying include: Preliminary cost advice; Cost planning; Life cycle costing; Value management; Facilities management; Project management; Procurement methods; Contractual advice; Tendering; Valuation of construction work; Risk Management; Cost control & financial management; Financial claims & programme analysis; Dispute resolution and insurance advice

Sub-division of Quantity Surveyors' duties:
All the duties of Quantity Surveyors can be classified into eight (8) sub-divisions as briefly explain below; and summarized in the table 1.

Feasibility and Viability Studies
This is a process to ascertain whether a project idea is realistic and economically viable. A Quantity Surveyor carries out a feasibility study in conjunction with other stakeholders (i.e. the client and other consultants). The outcome of the feasibility study helps the client to decide whether to go ahead with the project. There is cost implication in every dream or vision of a developer. It is the quantity surveyors' responsibility to make recommendations to the client on the viability of the project and give professional advice on any alternatives. A feasibility study involve; identifies alternatives, identifies reasons not to proceed, indicate new opportunities, gives quality information for better decision making, develop initial budget estimate from feasibility proposals, assist in acquiring funding from banks and other investor and identify target cost plan parameters, prepare overall project cost calculation and cash flow projections, pre-contract cost controls etc .

Cost Modeling

This is techniques used for forecasting the estimated cost of a proposed construction building (Ashworth, 1999). This implies that all techniques, methods and procedures that the quantity surveyors use for cost estimation or cost forecast may be tagged as cost models. These include: i. preparation of approximate estimate of cost ii. Cost Planning iii. Cost studies and research of construction resources

Risk Management Analysis

In construction projects, risk is regarded as the possibility of hindrance to project's success. Risk management has been regarded as a critical factor to successful project management, as construction project is becoming more complex with high competition. Risk assessment is therefore used to assess the uncertainty with regard to the costing decisions. Several studies have shown that number of risks in various aspects will constitute impact to project cost. The risks include project buildability, design, construction, health and safety, logistics, business continuity, political risk, contractor and subcontractor performance, contract specific issues etc.

Contract Documentation

It is the function of the quantity surveyor to prepare contract documents. According to Seeley and Winfield (2005) the principal documents are as follows:

Condition of contract: They define the terms under which the work is to be undertaken, the relationship between the client, architect and contractor, the duties of the architect and contractor, and terms of payment

Specification: This amplifies the information given in the contract drawings and bill of quantities, and describes in details the work to be executed under the contract and the nature and quality of the materials, components and workmanship. This may not be regarded as a contract document where there is a bill.

Bill of quantities (BOQ): This consists of a schedule of items of work to be carried out under the contract with quantities entered against each item, which is prepared according to Building and Engineering Standard Method of Measurement (BESMM).

Contract Drawings: These depict the details and scope of the work to be executed under the contract. They must be prepared in sufficient details to enable the contractor to satisfactorily price the bill of quantities

Form of Tender: This constitutes a formal offer to construct and complete the contract works in accordance with the various contract documents for the tender sum.

Other activities here include; Advice on tendering procedures and contractual arrangements, tender evaluation, analysis and reporting.

Contract Administration

- Cost planning and commercial management during the entire life-cycle of the project, from inception to completion
- Value engineering
- Procurement advice and assistance during the tendering procedures
- Commercial management
- Assistance in dispute resolution
- Asset capitalization.

Jack,*et.al*.,(2006) opined that such duties include: Cooperation and consultation with other members of the professional team; Preparation and updating of a detailed construction project. In addition, a quantity surveyor's duties include preparation of interim valuations, measurement of variations and changes in scope of work, agreeing claims, cost control, preparing financial statement, cash flow and final accounts.

Project Management

Project management involves developing a project plan, which includes defining project goals and objectives, specifying tasks or how goals will be achieved, what resources are need, and associating budgets and timelines for completion Implementing the project plan, carefully to make sure the plan is being managed according to plan. It is also regarded as a system or process of planning, designing, scheduling, managing and controlling interconnected project activities in order to achieve specific objectives or goal within a specific time, budget and standards (Lewis, 2007). Quantity surveyors are well qualified for the role of a project manager because they are

specifically trained in economics, financial, management, legal and contractual aspect of construction. Other activities include advice on the appointment and selection of the design team, drawing up a schedule of activities for all parties, monitoring progress to achieve the desired objectives, making sure the project is completed on time, assist in planning operational maintenance policy after completion and where project is commercially oriented advising on letting procedure (NIQS, 2015).

Direct Labour Project Evaluaion

Direct labour system is a method whereby the client design and produces his project by himself with the aid of his in-house professionals' void of the usage of contractors (Ogunsanmi et. al., 2003; Kadiri and Odusami, 2003). This is different from the traditional procurement system in that it does not involve the usage of contractors. It is therefore vital that a quantity surveyor should be present to guide the client in various ways:

- ✓ Preparation of labour and material schedules: this is done in other to determine the quantity of labour and materials required for a particular project.
- ✓ Supervision of actual purchasing of the materials: this can be achieved using the appropriate inventory modeling techniques.
- ✓ Cost control during the construction process: if well applied, it will lead to judicious use of materials. Also adherence to programme and plan will definitely lead to time management.
- ✓ Co-ordination and simulating the different activities: this is vital for smooth running of the work and for high productivity.

Arbitration and Expert Witness

Arbitration is a technique for the resolution of disputes outside the courts by an impartial adjudicator whose decision the parties to the dispute have agreed, or legislation has decreed, will be final and binding. Quantity surveyors act as arbitrators and their activities include:

i. Sitting as an arbitrator or Umpire
ii. Preparation of proof of evidence
iii. Preparing of award
iv. In addition they can be called to give an expert opinion when there are disputes.

Table 1: Classification of Quantity Surveyors' roles in construction

Roles	**Sub roles**	**Stages of application**	
		Pre contract	post contract
Feasibility and Viability study	Budgetary Planning for annual, rolling, medium and perspective development plans.	v	
	Capital investment policy advice	v	
	Advice on financial plans and procurement	v	
	Cash flow forecasts and analyses	v	v
	Profitability studies and sensitivity analyses	v	v
	Value analyses and cost benefits studies	v	v
	Life cycle studies and cost-in use	v	v
	Time effect on costs and profitability	v	v
	Annual budget advice on construction	v	v
Cost Modeling	Cost estimates and budgeting	v	
	Cost planning, monitoring and control to ensure that client's budget is not exceeded.	v	v
	Cost studies and research of construction resources	v	v
Contract Documentation	Preparation of Bills of quantities and other tender documents	v	
	Obtaining tenders and for the purpose of contract Administration	v	

	Tender evaluation, analysis and reporting	√	
Risk Management	Evaluation the choice of other consultants to ensure that they are qualify and competent to handle the project. Assessing the financial strength of the client to ensure his capability of executing the project. Setting of yardstick in terms of project cost, construction duration and expected quality or performance. Analyzing cost modeling to secure cash flow projections.	√ √ √ √	 √
Contract Administration	Preparation of interim valuations Measurement of variation and changes in scope of work Agreeing claims Cost control preparing financial statement, cash flow and final accounts Value engineering	√	√ √ √ √ √
Project management	Project Planning Designing Scheduling Managing Controlling Communication	√ √ √ √ √ √	 √ √ √
Direct labour project	Preparation of labour and material schedules. Supervision of actual purchasing of the materials. Cost control during the construction process. Co-ordination and simulating the different activities	√ √	√ √ √ √
Arbitration and expert Witness	Sitting as an arbitrator or Umpire Preparation of proof of evidence Preparing of award Gives expert Opinion	√ √ √	√ √ √

As shown above, some of the function takes place before the project execution starts (pre-contract stage); while others takes place during the execution or after award (post contract).

Pre-contract stage (Before construction starts)

Quantity surveyors can help with feasibility studies for a project. They can roughly estimate what's involved in the project, based on measurements of the designer's or client's sketches.

The quantity surveyor studies the architects' and engineers' plans, identifies the costs involved, and then sets an overall estimated budget for the project. They may compare the project with others like it. The quantity surveyor can then plan costs to help the design team stay within the project budget using practical solutions. This is called value engineering. The final detailed estimate is prepared by the quantity surveyor, together with a project architect. This is the basis for evaluating tenders.

Post-contract (When construction starts); the quantity surveyor keeps costs on track

Once the building starts, the quantity surveyor can provide cash flow data; this aid the client to arrange the finances needed for each stage of the project. The quantity surveyor prepares periodic valuation, access cost

effects when changes to the project occur, such as delays, and agree on 'variation' with contractors. The quantity surveyor can provide a bank with a project report and help a client by preparing draw down certificates for money to be loaned by the bank. Resolving disputes between clients, designers and building contractors is another role in some projects.

When construction is over, the quantity surveyor adds up the total cost. The quantity surveyor can prepare a statement of final account, which records the actual costs for all sections of the job.

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QS Role in Nigeria economic development

Quantity Surveyors have roles to play in the budget and planning in South east and Nigeria as a country. The budget of Nigeria for over 10years has not gone beyond 60% in execution. Over bloated budget of capital projects are noticed because there is no professional touch and discipline. Apart from this, supplementary budget are also provided for project that are under budgeted. Do we have Quantity Surveyors in budget unit of these ministries? It becomes odd when an accountant or other similar construction quacks plan and present budget for capital projects in Nigeria without input from the class that are technical trained to do so.

Corruption is a major hindrance to economic development in Nigeria (Nnadi, 2010). In Nigeria, these set of professionals skills are lacking in economic and financial crime commission (EFCC) and ICPC. It is therefore an impossible mission to fight and win corruption and financial crimes in Nigeria without the input of Quantity Surveyors.

Table below shows the number of quantity surveyors available for effective usage in south east. Also shown is a different sector they are currently involved.

Table 2: Quantity Surveyors' availability in south east

Sectors	Registered (1)	Probationers (2)	Graduates (3)	%
ACADEMICS	36	27	18	**15.52**
PRIVATE (Contracting & Consulting)	65	32	142	**45.79**
CIVIL SERVICE	38	46	44	**24.52**
PUBLIC (Politics, Banks etc)	8	14	52	**14.18**
Total	147	119	256	
Percentage	**28.16**	**22.80**	**49.04**	

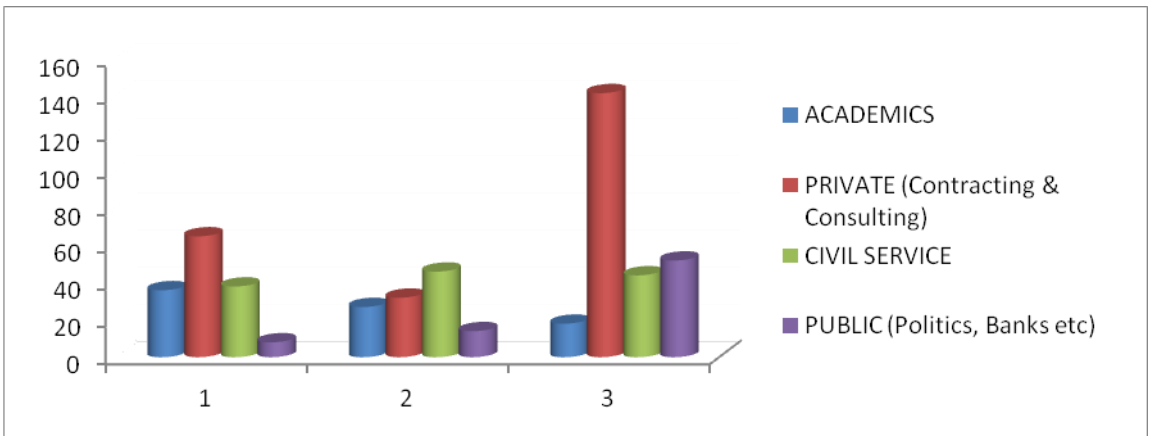

Chart 1:

Source: Field work 2015.

From the figures above, the numbers of Quantity surveyors available in South Eastern Nigeria could be identified. 28.16% of the numbers serving in various capacity are qualified and registered members. These numbers are duly qualified to render required professional services to the government, schools, and the private sectors as the need arise. The other two groups (probationer & graduate) are not qualified to independently offer professional service because they are still on training until they are certified by the Nigeria Institute of Quantity Surveyors (NIQS) and registered by the Quantity Surveyors Registration Board of Nigeria (QSRBN). Their activities must be scrutinized and approved by a registered member.

In conclusion, the data shown above indicate that the zone is not deficient in numbers of qualified members to meet the technical needs of the people. Failure to get their expertise brings about poor construction output and affects the industry's contribution to the growth of Nigeria economy.

Table 3: Level of Involvement of Quantity Surveyors in Project Execution in South East.

CATEGORY OF PROJECT	LEVEL OF INVOLVEMENT	SUCCESS RATE	REMARKS	REASON FOR INVOLVEMENT	OUTCOME
PRIVATE BUILDINGS	FAIR	AVERAGE	Notable for the involvement of quacks	Unwillingness to pay for professional services	Cost overrun, delay, conflicts and sometime abandon projects
PUBLIC BUILDINGS	HIGH	GOOD	Professionals are well utilized for contract administration	Procurement policy ensure the utilization of professionals	effective cost management, cost control and profit realization
CIVIL AND INDUSTRIAL WORKS	LOW	POOR	Professionals marginalization and conflicts	Poor policy, corruption, professional interference	Cost overrun, time overrun, formation of contractors' cabal and capital flight

Finding revealed that Quantity Surveyors are rarely utilized in the execution of civil and industrial engineering projects in South East Nigeria despite their skills, affordability and availability. Some of the reasons include professional conflict with Engineers; meanwhile, all professionals have different functions. For instance, it is saddened to discover that State governments within the region execute road projects worth Billion Naira without the input of Quantity Surveyors; even the QS at the ministries of works are denied the supervisory role. The Quantity surveyors in these ministries are limited to supervision and evaluation of building works (Mainly Enugu and Anambra states).

Data collected from professionals in these states affirms that Imo, Abia and Ebonyi states are just executing project with 'official fiat' without Quantity Surveyor's input. These can explain the reason for poor contract documentation, high construction cost, wastes, poor project execution, time overrun, capital flight, corruption,

underdevelopment and economic malnutrition in the affected states compared to their counterparts in other zones where the technical expertise of Quantity Surveyors are well utilized like South west and North central.

Comparative Analysis of Project with & without the Inclusion of Quantity Surveyor

The data analysis below shows the outcome of project executed by Hon. Nzelu who sought QS service and Mr.

PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT **SITE LOCATION AT AIR PORT RD, HILL VIEW EXT. LAYOUT, ENUGU**			
ITEM	DESCRIPTION	AMOUNT (₦)WITH QS SERVICE	AMOUNT (₦) WITHOUT QS SERVICE
	SUMMARY		
A	FOUNDATION WORK TO GROUND FLOOR SLAB	3,213,542.67	3,854,150.00
B	GROUND FLOOR SLAB TO DECKING	5,423,574.00	5,852,543.00
C	UPPER SLAB (DECKING) TO ROOF LEVEL	2,277,364.00	3,925,482.00
D	ROOF CONSTRUCTION	1,459,540.00	1,869,842.00
E	DOORS /WINDOWS AND STAIRS	2,527,500.00	3,124,280.00
F	SERVICES (ELECTRICAL & MECHANICAL)	3,684,265.00	4,258,430.00
G	FINISHINGS	4,360,840.00	6,241,380.00
H	DRAINAGE	935,000.00	900,000.00
J	PRELIMINARIES	950,000.00	1,200,000.00
K	QUANTITY SURVEYOR'S FEE	650,000.00	-
	Contract Sum	**25,481,625.67**	**31,226,107.00**
	EXECUTION/COMPLETION SUM	**22,345,625.00**	**28,750,120.00**
	Contractor's profit (%)	**12.31**	**7.93**
	Completion Period	**32weeks**	**41weeks**

Menkiti who didn't at the location in the summary sheet within the same; locality, working drawing, soil nature, period and contractual arrangement.

Table 4: Comparative analysis of QS involvement in a project

From the above, the involvement of the QS ensures a savings of N5,744,481.33 which is 23.72% for the client; that is (N28,750,120.00-22,345,625).

The contractor made a profit of 12.31% where the service of QS was involved despite the fact that the contract sum was lesser but the contractor merely made a profit of 7.93% without the QS cost management even with juicy contract sum.

The involvement of Quantity surveyor ensures speedy completion of the project to expected performance.

Conclusion & Recommendation

Non-Involvement of Quantity surveyor at the pre-contract level gives birth to inaccurate quantities, poor estimation, unrealistic feasibility and viability evaluation. Meanwhile, the result of non-involvement of QS in post contract stage include: cost overrun, time overrun, variation, project delay/abandonment, poor cost control, low profit margin among others.

The south region legislatures should pass a bill mandatory the inclusion of the Quantity Surveyors in all construction projects to ensure accountability, probity, cost saving and effectiveness.

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