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## Cost Control Systems and Good Governance: Tools for Effective Project Delivery.

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### **Abstract**

*Achieving effective project delivery dictates that cost which is the most visible performance metric has to be controlled. Lack of accountability, transparency and probity as ingredients of good governance and the prevalence of corruption have considerably affected effective project delivery in Nigeria. This research appraises the influence of cost control systems (mechanisms) and the elements of good governance on effective project delivery. This it was able to achieve by drawing from reviews on previous studies, critique on the various cost control process, procedures and mechanisms (approximating estimating techniques, cost analysis and planning, best value practice, due process and cost reporting) as well as the various external pressures which influence cost control outside the brief and designs and the immediate project environment. This is with a view to minimize the cost of projects. Research findings are suggestive that the lack of elements of good governance (accountability, probity, transparency) and the prevalence of corruption have considerably inhibited the efficacy of cost control systems. The research concludes that the cost control systems cannot be isolated from the general project environment; it is an integral part of the total project management efforts. There are deteriorating aspects of good governance as they relate to effective infrastructure delivery. The research recommends as follows: The adoption and application of efficient and effective systems of cost control and management mechanisms. Develop and establish a process of contract award, which integrates oversight certifications, due process as well as the sustenance of the ingredients of good governance. Reinforce and strengthen the efficiency capability of established governmental anti-corruption agencies.*

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**Keywords:** *Cost, Good Governance, Cost Control Systems, Best Value Practice, Cost Reports.*

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### **Introduction**

#### **The Concept of Cost**

Achieving effective project delivery dictates that cost has to be controlled during the entire phases of projects (that is the initial, pre and post tender, construction stage and up to the maintenance period.

Capital cost estimate to the client of proposed works is not simply production cost but production cost plus minus ( $\pm$ ) make up. Production cost is itself an amalgam of direct cost, indirect cost and overheads. Therefore the information utilized by the client's cost advisers should impart knowledge of these costs. Although the relative importance of each type of cost will vary between projects it can be assumed that the direct cost is the primary cost feature of any project. Indirect costs are those which relate to the overall duration of the

project. They are affected by the rate of completion of individual activities in as much these cause variations in projection duration. Overhead costs include management and head office overheads (Hard Castle 1982).

Williams (1996), has noted that estimating the total cost of the work is derived from the cost of labour, materials, plant, preliminaries, provisional and prime cost sums, day works and overheads. The estimation of the total cost of the work consists of: estimating the cost of the individual elements of the cost. Building up the total cost taking into account each individual element of the cost concerned. The major elements of the total cost of the work are: The labour cost, material cost, the plant cost. The remaining elements which contribute to the total cost of the work are: Day works, provisional sums, prime cost sum and contingencies, preliminaries or site charges: (a) water for the works (b) small plants and tools (c) the haulage of plants (d) site offices for the architect or engineer (e) site offices for the builder or contractor (f) watching and lighting (g) the control of traffic and the additional cost involved (h) temporary roads and hoardings (j) contract guarantee bond (k) insurances (k) building fees. Establishment, overheads or head office charges, Cost is the universal and most highly visible performance metric for indicating project success. (Tichacet 2006 cited in Ishaya et-al 2015). According to Cartilidge (2009), cost can include site preparation and infrastructure costs, demolition, contaminated land costs, roads, sewers and main sewers. Construction costs, professional fees, finance costs, disposal costs and developer's profit.

Cost to the building contractor represents all those items included under the heading of his expenditure. Cost relates to the manufacture and price relates to selling (Ashworth 1988). The cost of labour, materials and equipment used in the work may not account for the entire anticipated cost of the project. Some services and items of construction required to complete the project may not, by definition be incorporated into the works. It is necessary to include those costs as mark ups to cover the contractors' expenses (Bledsoe 2002).

### **Concept of Good Governance**

Good Governance is the inter play of best practices to the government of the nation. The concept characteristics issues of performance in the management of the country's political, economic and social resources to enhance human progress, social and well being and sustainable development. The purpose of good governance is to create a conducive climate for political and socio-economic development and to increase the efficiency and effectiveness of development programmes. The main features of good governance include legitimacy of government, accountability of political and official elements of government; accountability of political and official elements of government: competence of government to formulate policies and deliver service and respect for human rights and law. (World Bank 1994, cited in Anago 2002).

There is however a plethora of problems in Nigeria, the lack of ingredients of good governance (*accountability, probity transparency*) and the prevalence of corruption have considerably affected effective cost control and subsequently capital project delivery.

Studies on the accuracy and effectiveness of cost advice have emphasized the direct technical aspects of early cost advice, with less attention to other very important but latent issue. This research reveals that there are issues that dwell on human judgment which are also capable of influencing cost of project. This research draws from previous studies on some of these issues.

Historically, the award of contracts in Nigeria has been perceived as lacking transparency, inflated contract cost and processes that were closed, discretionary and well designed conduits for abuse of public power were systematic (Needs 2003).

The corruption quagmire in Nigeria was rooted in the failure and virtual collapse of governance, the contamination of democratic values, the erosion of procedures for accountability and the relevance of bad leadership. Waning public confidence in the country's political and economic institutions promoted a culture of contempt for the rule of law and ultimately a societal tolerance for behaviour previously considered abominable. Neither today nor the future can Nigeria afford the social, political or economic cost that systemic corruption has imposed. Reforms aimed at increasing the transparency and accountability of public institutions and government operations are still needed to redress our circumstances (Needs 2003).

According to Mogbo (2000), Public accountability is the order of the day in modern democratic governance. The desire to create networks of checks and balances on public projects as well as the stamping out of corruption in both the public and private sectors have now formed a cornerstone in government policy of the present democratic dispensation. There is a need for paradigm shift in the methodology for determining the cost of public sector construction projects (Dikko 2015).

Ajayi and Mafimidiwo (2015) have revealed from a study that the procurement process in Nigeria is facing a lot of challenges. The study shows that the major factor affecting due process implementation on construction projects in Lagos State is political interference by influential political figures and the misuse of power by top level official and as such if adequate measures are not taken to curb this amongst the top officials handling public procurement the purpose of due process is forfeited. Therefore, the need on how to abate to the minimum level all manners of unethical practice and promote the ethos of transparency, objectivity and accountability for the achievement projects delivery to time, cost and quality through the adopt of due process (Karem, Asa and Lawal 2014, cited in Ajayi and Mafimido 2015).

The dynamic, rapidly ever changing and complex construction environment poses enormous challenges on the services of quantity surveying, cost wise. This development comes with challenges on design and cost management of construction projects. The economic, political and other external resources and influences these and demands they make on the costing and efficient project delivery has to be dealt with by construction cost and management experts (Mac-Barango 2015).

The construction industry and the environment in which it operates have changed significantly. The process of change now seems to be never ending and hectic. Against this back ground, contractors and consultants have to cope with the ever increasing pressures for faster construction to a higher quality at a lower cost. However what has not changed is the importance of effective cost control. Cost should not be simply monitored, the need to be controlled and managed from the early design stage through to project completion. Some CAD systems give cost information, but they cannot control cost, that requires specialist human knowledge. Client's wants certainty of price, projected constructed within budget, completion on time, the best quality possible for the price, value for money, no surprises. Contractors and consultants want a reasonable return for the risk they take, payment on time,

clients who do not keep changing their minds, satisfied client and repeat business. The aim of the clients and contractors are not in conflict they are complementary. Public sector organizations are subject to audit and public scrutiny of their accounts. Value for money and accountability are high on their priority list. In the private sector, a public company must act in the best interest of the shareholders, while a privately owned company will always be seeking to optimize expenditure. In every case whenever an organization gets involved in a correction project, the override objective will be to manage the cost within budget. Actual building expenditure must accord closely to the estimated expenditure. The cost consultants are usually instructed to forecast and budget the cost of a building at a very early concept stage before drawing and specifications are available and they are often required to keep to their first estimate. Clients are increasingly resorting to litigation when things go wrong. Where continuous cost control has not been exercised, then it is quite likely that tenders received will exceed a client's budget limit. Accordingly, unless effective techniques are put in the place from the onset, it might not be possible to achieve a balanced design and thus ensure value for money. There are few projects in the world where the design team has been told not to worry about the cost (Flanagan and Tate 1997).

This research therefore seeks to minimize the cost of a project and enhance value or money at same time achieving the required standard and quality. The research also promote the quantity surveyors (the construction costs experts) principles of probity, accountability and efficient resource management, value for money, co-operate governance and due process as its contribution to national development and anti-corruption crusade. This research focuses on cost management/ control of the construction cost for public sector clients which include the direct, indirect and overhead cost and the anticipated profit mark up of the contractor.

Hard Castle (1982), corroborated to the above assertion, observing further that to determine the client cost of a project is subject to a number of possible influences many of which are external to those features quoted by him in his brief to the designer. Among these are aspects such as contractors' cash flow manipulation, human error, the market economy, social acceptability, pricing and the absorption costing techniques. If it is possible to isolate the direct and indirect production costs from these other cost factors of overheads and profits, it may be possible to establish cost of production and, therefore, of design decisions. The principle factors which affect these costs are those which affect productivity and include the design in its technical sense, repetition within and between stages of work and the interdependence of operations of constructions. Thus it is desirable for the design team to have knowledge of production costs. The cost types are known and understood as are the major influences upon these costs. There is at present however, no interpretative document which can translate and transmit this information from the production team to the design team. Seeley (1996), has observed that it is vital to operate an effective cost control procedure during the design stage of a project in order to keep total cost of the scheme within the building client's budget. The research therefore focused and appraised the various cost control processes and procedures, as well the various external pressures which influence cost control outside brief and designs and the immediate project environment. It also draws critique on the relationship between good governance and cost control systems and subsequently on effective projective delivery. Finally arising from the reviews and critique it draws conclusion and offers recommendation.

### **The Principles and Procedure of Costs Control Systems**

Cost control entails all the process, procedures and the systems that are targeted towards achieving project objectives: Time, Cost, quality with the fundamental essence of achieving value for money to all the stake holders of the projects. Cost control involves an array analytic techniques and sequences and procedures.

Landgon (2007), has corroborated observing that cost control enables the employers to satisfactorily find their desired building projects, know how much each is going to cost and when they will have to pay.

There are various principles, techniques and procedures through which the cost of construction infrastructure can be controlled.

Bathurst and Butler (1980), Cartlidge (2009) have advanced an array of preliminary and cost yard sticks techniques employed for cost control at the preliminary estimate stage. The processes are the unit, the cube the square and the storey enclosure methods. Others are approximate quantities and cost analysis and cost plan techniques. The basis and characteristics of the application of single rate method as observed by Bathurst and Butler (1980) are that the estimates must be based on information that are related to the general characteristics of the building (i.e. the number of occupant, the floor are or the volume). Also the methods and the application of general rules of the preliminary estimating techniques are extensively reviewed elsewhere. Cartridge (2009)'s headings provide a relevant basis for discussion on the techniques and the general rules and sequence of application on cost planning, cost analysis and the development of the cost plan outline of works.

Oladapo (2008), has opined that aside the single price rate methods of approximate estimating has revealed that the bills of approximate quantities, life cycle costing, discounted cash flow techniques, sensitivity analysis and project risk analysis also provide means of evaluating the financial viability of projects in terms of structure of costs.

The choice of the cost control system, techniques and procedures are functions of the level of accuracy of the exercise, the stage of construction at which the technique is being applied and the available data for use.

Langdon (2007)'s schematic diagram forms a relevant basis for discussion on the plan of work and sequence of the activities for pre contract cost reports by the Quantity Surveyor. At the start of the sketch scheme the Quantity Surveyor will probably be required to prepare an initial cost estimate in as much as the sketch scheme will be short on detail, yet the employer will expect a reasonably indicative estimate of cost, it will take an imaginative Quantity Surveyor to address the full cost consequences of outline information.



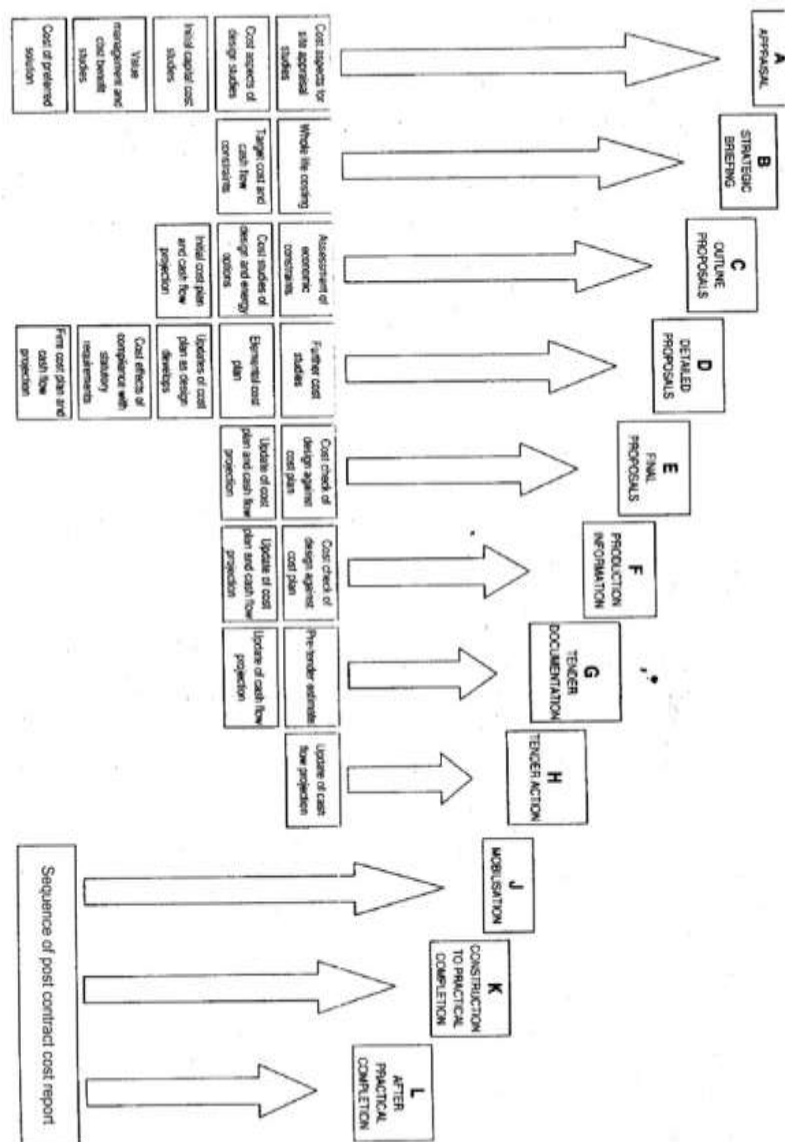


Figure 1: Plan of work - pre-contract cost reports by the quantity surveyor.  
Source: Langdon (2007)

Cartlidge (2009), using the RIBA outline plan work 2007, has shown that the various stages in contract costing process consist of the following: headings and the activities. **Preparation:** Involves appraisal and design brief. **Design:** Involves concept and design development and the technical design. **Pre-Construction:** Involves production information, tender documentation and tender action. **Construction Stage:** Involves mobilization and construction to practical completion. **Use:** Involves the post practical completion exercise and post occupancy evaluation.

**Cost Control at the Construction Stage**

Langdon (2007), has observed that if design team is to obtain maximum benefit from pre-contract cost control, it is essential that a sound cost reporting regime be adopted. The Quantity Surveyor should provide cost reports post contract plan of work and sequence in accordance with the schematic diagram (see fig 1). Also, because the level of information available on which to base the estimated costs will vary from time to time, it is essential that the Quantity Surveyor sets down in clear and concise as much of the following information as

is available, always stating where assumptions have been made: date of report, names of the design team members, address of the site, extent to the site and any restrictions (e.g. as to use or access), planning situation, basis of costs, anticipated rate of inflation relating to costs used, date of commencement of the works on site, the contract period, any phasing of possession, any sectional completion, etc.

Ekpo (2001), provides a checklist of items for controlling the implementation of highways, roads and infrastructure, before and after contract award. The items include feasibility studies, including choice and availability of site, client's budget estimate, the sourcing of finance, etc.

Pre-qualification document can be in form of a questionnaire asking for contractors details on the following: company organization and structure – year and grade of registration, regional basis, national/international officer, key statistical data-registered offices, branches, bankers, capital structure, annual turnover, profit progression and 5-years audited and published accounts, current and completed projects, records of plant and machineries, special expertise or experience, resumes' of key personal, project organization structure and management approach, outline method statement, evidence of quality assurance, health and safety policy statistics and or records, references from previous clients, bankers and even specialist contractors. A typical pre-contract documents (tender documents), which on the long run may be the basis for the contract will include among others the following: instruction to tender, form of tender, pricing notes and preambles, articles of agreement, conditions of contract, specification and/or bills of quantities. Adequate and deliberate plans and actions must be put in place at pre-contract stage to ensure that defects in project information are averted. Each of these documents contributes in no small measure to determining the realization of the chosen sequence of procurement options in terms of time, quality and money. Control of money takes three different forms: cash flow, cost, value. A detailed comparison is then carried out between cost and value and between cost, value and cash flow (out and inflow) using previous data of similar projects (Adetola 2001).

The above outlined items though are forwarded in respect of what can and should be controlled during the implementation of highways, roads and infrastructure projects. In my opinion the check list could be adopted, provides a database for contract auditing and cost control of infrastructure.

Pullen (2001), cited in Mogbo (2004), revealed that the local government act passed in 1999 sets out the requirements of best value. The legislation imposes a statutory duty, from 1st April 2000 to obtain best value on all local authorities. The key phrasing in the act reads: A best value authority must make arrangements to secure continuous improvement in the way in which its functions are exercised, having regard to a combination of economy, efficiency and effectiveness. To assist the process, key performance indicators (KPI), have been established to further facilitate Best value, the government expects the development of partnerships within the private sector to achieve delivery of cost-effective services, ensuring competitiveness. A cyclical review process with regular monitoring is an essential part of the ethos. In order to show that best value and value for money are being achieved, it is essential to benchmark performance, including costs. BCIS has been providing a benchmarking service for contract prices for many years through its tender price index, whereby a project can be statistically analyzed and compared with all other projects taking into account, influential factors such as location, size of contract, building function, storey height, etc.

Cost management simply means the controlling measure that can be taken to ensure that contract sums of projects are not exceeded. It involves the use of techniques and procedures such as early cost advice, cost planning at the pre-contract stages and all other post-contract cost control measures put in place during the execution phase of projects (Abdularazaq, et-al 2013). During construction, cost management functions are carried out through cost control and cost monitoring to ensure the cost budget is not exceeded. Having established the bill of quantities as the cost model for the project, constant evaluation is carried out in order to ensure possible remedial actions. Some of the cost control activities include preparation of interim valuation, assessment of variation and contractual claims, financial reporting amongst others. Contractors Quantity Surveyors also assist in the pursuit of value for money in the overall interest of the project by ensuring effective cash flow forecasting and site control (Ogunsemi 2015).

### **Cost Control Systems**

A cost system is a complex set of procedures established and used in a project for the express purpose of controlling the project costs. It includes the formal and informal relationships required with estimating, planning/scheduling, monitoring and reporting functions and as such provides the basis for: standardized methods of controlling individual project costs in the multi-project environment. Cost control of individual projects by maintaining a current indicated total cost based on relevant, timely data and information from all sources. **Cost accountability** by defining specific areas of responsibility within the system and by creating and maintaining the cost-consciousness of the responsible parties. **Performance monitoring** by providing data and information on actual costs/quantities with those estimated. **Change control** by recording deviations e.g. in scopes of work and requiring relevant authorization(s). The use of a cost system cannot be treated in isolation from the general project environment – it must be an integral part of the total project management effort and contain both formal and informal communications channels with all other functions. In this context it must be both efficient and effective where: **Efficiency** is derived from an adequate set of formal procedures and documentations. **Effectiveness** is derived from measuring, analyzing and reporting upon relevant data and information which is then acted upon because it is relevant. (O’Neill 1989).

### **Best Value and Engineering Analysis**

Contract costing process and technique also entail getting the best possible satisfaction from services provided. According to International Data Group (2009), this involves obtaining value for money which requires that the overall benefit of an activity be weighted up and compared with overall cost.

The adoption of best value practices is to enhance the performance, utility of infrastructure and value at the least possible cost. Best value practice is having a fundamental effect on procurement. At the centre of best value is the requirement to review all services/components and report on the performance of the council to the local people. Procurement and benchmarking are two aspects of best value (Tindale 2001).

Best value practice also involves value engineering which according to (Martin 2001) is a systematic approach to delivering the required functions to the required quality at the least cost. It is therefore, a method of ensuring that the client gets the best possible value for money in terms of safety, performance and delivery targets. By comparing the proposed cost



against a reliable benchmark, the value engineering team can help to ensure that they are matching the resources available to the priorities of the client.

Accountability is the responsibility for given reason why a particular course of action has been taken. In essence it does not simply have to do the right things, but having to explain why a particular choice was made in preference to others that were available. Accountability is of greater significance when dealing with public employers where it is necessary to justify why a particular course of action was taken. It has become increasingly important with all types of employers where an emphasis is placed on achieving value for money on capital works projects. The document used for construction works is often complex and the technical and financial implications are considerable. Employers need the assurance that they have obtained the best possible procurement method against their list of objectives. The possible trade-offs between competing proposals will need to be evaluated. Where tenders are sought in the absence of any form of competition, it is difficult to satisfy the accountability criteria in respect of price. There is also the difficulty of justifying subjective judgments where these appear to be in conflict with common practice, but the process of selection will never solely be a mechanistic process. The elimination of procedural loopholes should be such as to provide the employer with as much peace of mind as is possible. Accountability is interlinked with finance and an emphasis on paying the smallest price for the completed project. It may be easy to demonstrate to some employers that to pay more for a perceived higher quality or earlier completion is worthwhile. Other employers may need more convincing and some will feel doubtful about non-monetary gains (Ashworth 2012).

Emphasis is usual placed on paying the smallest price for the completed project as well as the procedure for the selection, award, and administration of contracts must be as precise as possible. Auditing places a useful role in the tightening up of the procedures used, with ad hoc arrangements that breach these procedures being discouraged. Systems that require huge amounts of documentation and the subsequent checking and cross checking of invoices, time sheets, etc are not favoured because of loopholes that can occur. Open-ended arrangements which are unable to provide a realistic estimate of cost are fraught with difficulties in demonstrating value for money at the tender stage, since any forecast of cost will be to imprecise for reliability purposes. Here are the accountability factors to consider: Contract Selection, Ad hoc arrangements, contractual procedures, loopholes, simplicity, and value for money. (Ashworth 2012)

### **Cost Reports**

During the construction period of a building contract the employer will wish to know at regular intervals what the final cost of the project is likely to be. The Quantity Surveyor, as part of his post-contract professional service, will provide cost report. Usually monthly, which give, the employer his best estimate at that time, the final cost of the project. This cost reports will start with the contract sum and make adjustments for architect's instructions issued concerning variations and expenditure of prime cost and provisional sums: provision will be made for likely future architect's instruction not at present issued but about which details are known by the Quantity Surveyor. Also, the Quantity Surveyor will include an estimate of any likely claims that are in the pipeline: if the contract is on a fluctuating basis, he will also give an estimate of the likely fluctuations at the end of the contract (Hancock 1984, cited in Mogbo 2004).

### **Qualitative Aspects and Features of Cost Control Systems**

Cost control is beyond the analysis on design and immediate project environment. Cost control systems also provide the means of evaluating the external influences and pressures that inhibit the efficiency and effectiveness of project delivery. This is can achieve through the adoption of procedures and mechanisms that address issues of accountability, probability, transparency and corruption. This also involves some aspects of contract auditing.

Ashworth (1988) has observed that the costing of the qualitative aspects of design is not so easy and relies heavy upon experience and opinion and value judgment. However since aspects of quantitative analysis are integrated with the qualitative, it is almost impossible to consider one without the other.

### **Contract Auditing**

Contract auditing essentially comprises contract review and cost auditing. It is a careful ordering of facts derived from relevant project contract documents, comprising drawings specification schedules, bills of quantities, schedules of rates, conditions of contract, claims, estimates, cost projections and relevant correspondence relating events that transpired during the currency of the contract, in such a manner that it tells the proper story of the state of affairs of the contractual relationship at the point of the study. Cost auditing is an exercise undertaking to compare and justify contract rates, contract sums, payments, claims and cost estimate of works. The objectives of cost auditing are to ensure that contract sum is a fair price for the works, that payment made is justified by the value of works completed, contract documents appropriately reflect the quantum of work comprised in the project and that the work contract is not an inflated contract, including ensuring that there is an equitable determination of contract value. Contract auditing employs cost auditing techniques and contract review methodology to achieve monitoring and control objectives of project implementation (NIQS 2000).

Contract auditing could be pre or post mortem. Pre-mortem contract audit is preventive while post-mortem variety is curative. The former therefore aims at preventing things from going wrong, while the latter focuses on what went wrong and why: contract auditing would therefore involve detail analyses of: instructions to tenderers, conditions of contracts, drawings specifications, bill of quantities and/or schedule of rates and information data (Anago 2001).

Contract auditing in its simplest form is concerned with establishing whether or not a project is being executed according to original plan or design. The idea is to ensure that all procedures laid down for executing a project are implemented to the letter. For example, it reports whether or not funds approved and allocated for a project judiciously used and applied for purposes originally intended. Above all contract auditing can assist in value analysis leading to cost minimization. The goal of contract auditing is to ensure that procurement and execution of capital projects are in compliance with relevant professional ethics and laid down public procedure to meet budgetary provisions and realistic construction cost. Activities involved in contract auditing include the following: Assemble documentation on the project, analyze the same documentation, examine compliance with laid down procedures, document findings, assessment, appraisal, monitoring and evaluation of specific aspects of the project, compare performance with original target, institute remedial actions, establish whether or not the project is on course, establish whether the contract sum is fair, computer realistic cost of the project, prepare and present report (Wahab 2003).

Contract auditing is the appraisal of the critical components of a contract package to ensure inter alia, equitable risk allocation among the contracting parties, competent procedural framework for timely and cost efficient project delivery and an end product that meets the client's performance expectations. When narrowly constructed, it restricts itself to a rational analysis of the rights, duties obligations and liabilities of the contracting parties.

For control measures to be effective there must be bench marks established early during the cost planning phase, typically as would be contained in the contract bill of quantities. Performance is measured against these bench marks so as to determine the level of progress, as well as confirm that the cost of the project is not derailing. Where there are deviations from the bench mark, the valid reason must be known (Oforeh 2004).

### **An Overview of the Underlying Principles & Philosophies of Cost Control Systems & Good Governance**

Arising from the forth going cost control in my opinion and for all purposes and intent include all the controlling measures necessary to ensure that the authorized maximum costs of projects are not exceeded. These measures include pre contract cost control activities as well as post contract ones. There are aspects and features of cost control which are beyond the processes and procedures that dwell on arriving at cost and control of infrastructure from designs and immediate projects environments. *Costing of capital project therefore transcend interpolation from designs alone. There are postulations that the control of aspects and features of cost items need human judgments.* There are no means through which these costs can be obtained from designs not even through computers.

In order to determine the client cost of a project the above costs i.e. direct cost indirect cost plus overheads must be determined, as must the anticipated profit make up of the contractor. The client cost is, therefore, subject to a number of possible influences many of which are external to those features quoted by him in his brief to the designer. Among these are aspects such as contractors' cash flow manipulation, human error, the market economy, social acceptability pricing and the application of absorption costing technique if it is possible to isolate the direct and indirect production costs from the other cost. Factors of overheads and profits, it may be possible to establish cost of production and therefore, of design decisions. The cost types are known and understood as are the major influences upon these costs. There is at present, however, no interpretative document which can translate and transmit this information from the production team to the design team (Hardcastle 1982).

This research paper considers these aspects/features critical because to the construction expert, costing is paramount, while to others it may be an adjunct function. There is also an understanding of underlying philosophy that arguments on the efficiency and effectiveness of cost systems and modes notwithstanding, every person has agreed on the importance of effective costing and control for project delivery.

Flanagan and Tate (1997), corroborated the above assertion and further postulated that there are some underlying philosophies which guide the need for cost control. This is due to four main pressures (1) The delivery time for project is important (2) The client's requirements are more complicated (3) The number of organizations involved in a project has increased (4) The current practice in design, where new ideas, techniques, materials and components are used. This coupled with the purpose of cost controls which include: (a) To give the client good value for money (b) To achieve the required balance of expenditure between the various

parts of the building (c) To keep expenditure within the amount allowed by the client; the final account to the client should not exceed the first estimate.

This makes imperative considerations for control on the quantitative aspects of project costs; adopting for example the technical techniques of approximate estimating and quantities, cost analysis and planning, BOQ, cost reporting during the construction stage. As well as appraisal of those external aspects and features (Lack of probity, accountability, transparency) as ingredients of good governance and the negative impact of corruption syndrome which need human judgments to effectively control their impact on project delivery.

Clear concise and accurate communications are essential to ensure that all participants in the cost control process understand what is required in effective costing. This entails the application and adoption of relevant and adequate cost control systems that are efficient and effective. The efficiency of the cost system to be achieved through adequate documentations: such as Engineering department – work request form, engineering department change order and ITC Report spread sheet on the basis of Total cost. Other documentations forms and sheets include monthly reports by account and function summary, management summary report and engineering and home office “Estimate to complete” form.

### **Reforming and Strengthening Public Procurement**

Budget monitoring and price intelligent unit which began a process of contract award, review oversight and certification (i.e. Due process). This simple mechanism certifies for public funding only projects that have passed the test of proper project implementation packaging. Through certification value for money is returning as the fundamental premise for public expenditure (Needs 2003). Traditional quantity surveying techniques such as cost studies, cost planning, estimating and design cost monitoring against budget, as the design progress should be rigorously out. Alternative designs are also checked based on the same parameters. The project will require substantial financing over the design and construction periods when there will be no revenue income. Furthermore, any major variations in the project completion and cost may result into additional borrowing requirement. It is therefore necessary for the project company to put in place an efficient and effective mechanism to monitor the design and construction process so as to avoid incurring unnecessary cost penalties. The project control system should be integrated with the project accounting system in order to ensure that double handling and duplication of data is avoided. This again suggests the need to a multi disciplinary approach to financing and cost management. The selection of appropriate software that integrates construction cost management with the project financial accounting system is therefore very important. The cost control system must be capable of providing holistic and appropriately detailed reports to facilitate timely decision making derived from reliable and relevant cost and performance data. Again, any major variations in actual costs over budget may result into additional borrowing requirement. It is therefore necessary for the project company to closely monitor the process to avoid incurring unnecessary cost penalties (Oladapo 2008).

Effective project delivery can be enhanced through cost control adopting control and monitoring techniques, like ‘S’ curve through contract auditing: these techniques provide good basis for measuring, analyzing and reporting upon relevant data and information using benchmarks which have been set even before mobilization to site and execution of a contract. The usefulness of the ‘S’ curve as a cost control techniques lies in its ability to dictate

divergence between planned and actual occurrences in contract parameters: cash, time and quality projections: contract auditing as a cost control system is a set of formal procedure which outlines a documentation that forms a basis for checking early articulated and established benchmarks on contract requirements and parameters – financial, environmental, etc. The effectiveness of a cost audit system lies in its ability to analyze and report upon of expected benchmarks.

### **Conclusion**

The use of a cost system cannot be isolated from the general project environment, it has to be an integral part of the total project management effort and contain both formal and informal communication channels with all other functions. Efficiency is derived from an adequate set of formal procedures and documentation. Effectiveness is derived from measuring, analyzing and reporting upon relevant data and information which is then acted upon because it is relevant.

The dwindling Nigerian economy, coupled with the ever changing and challenges poses/exerts considerably pressures on the construction industry environment. The emerging global markets and trends as well as the deteriorating arts of governance, specifically as they relate to good infrastructure procurement, further exacerbate the situation. This calls for the adoption and application more efficient and effective systems of cost control and management mechanisms that enhance effective project delivery. The underlying principles and philosophies of such systems are hinged on the premise that perceived or real pressures from the external environment (compromises and weakness arising due to lack of arts of good governance) – probity, accountability, transparency as well as within the internal environment could be tackled through the adoption of efficient and effective cost systems for project delivery.

A good cost control system compares measures, evaluates, compares costs of projects (i.e. planned versus actual items of expenditure and incomes); derived from relevant data base using bench marking as standard basis. Cost control and management systems (approximate estimating, cost analysis and cost planning) as well more contemporary approaches – value analysis and value engineering, provide efficient and effective cost have propensity to enhance effective project delivery. A good cost control system adopts holistic IT and computerized approach as well an efficient and effective bureaucratic process towards arriving at an effective cost minimization and project delivery.

### **Recommendation**

Contract awards should be supported and guided with measures that curb corruption, reduce waste and establish the right set of values: some of the right set of values which seek attention are: (1) integrity and good citizenship at the individual and corporate level (2) discipline and a strong work ethic (3) excellence, competitiveness, creativity and innovation in service delivery (4) perseverance and longer term thinking as opposed to short-term expediency (5) thirst for knowledge, information and know-how on strategies for effective project delivery.

Strategies and check and balances to be adopted towards accomplishing the above mentioned are to include:

- Develop and establish a process for contract award, that include reviews
- Oversight certifications and due process



- The process is to be guided through procedure that comply with open, competitive bid parameters (i.e. transparency, accountability, probity) and thus value for money
- Reinforce and strengthen the efficiency capability of established governmental agencies and organizations that are straddled with responsibilities and obligations of sustenance of the ingredients of good governance, that strengths public procurement and effective anti-corruption policy is a priority of government. (Needs 2003).

Contract auditing and cost reports previously undertaken and published by organizations, both private and public (agencies, departments and ministries) as well as reviews of documents arising from such cost reports form a basis for adding value to project delivery.

### References

- Abdularazaq M, Abdullahi, A. J and Ibrahim, A. D (2015): Use of Knowledge in the Nigerian Construction Industry. In: Laryea, S and Leiringer, R (Eds). Procs 6<sup>th</sup> West Africa Built Environment Research (WABER) Conference 10<sup>th</sup> – 12<sup>th</sup> August 2015, Accra, Ghana (691 – 704).
- Adetola, F. O. (2001): Pre Contract Management and Documentation in Highways, Road and Infrastructure. Paper Presentation at a 2-Day Workshop. Costing and Management of Highways Roads, and Infrastructure organized by the Nigerian Institute of Quantity Surveyors Tuesday 10<sup>th</sup> & Wednesday 11<sup>th</sup> April, 2001 at the Centre for Women Development, Abuja. Pp 6 & 7.
- Ajayi, O and Mafimido, B (2015): Due Process Practice on Construction Projects in Lagos State, Nigeria. In: Laryea, S and Leiringer, R (Eds). Procs 6<sup>th</sup> West Africa Built Environment Research (WABER) Conference 10<sup>th</sup> – 12<sup>th</sup> August 2015, Accra, Ghana (337 - 345).
- Anago T.I (2001): contract auditing and accountability. Paper presentation at the 2<sup>nd</sup> day workshop on costing and management of highways, roads and infrastructure: Organized by the Nigerian Institute of Quantity Surveyors. From Tuesday 10<sup>th</sup> – Wednesday 11<sup>th</sup> 2001. At the center for development Abuja.
- Anago, T. I. (2002): Ethical on National Development: Paper Presentation at the 20<sup>th</sup> Biennial Conference. Theme: Building the Blocks of National Development Challenges Conflicts and Prospects. Organized by the Nigerian Institute of Quantity Surveyors. From wed 30<sup>th</sup> October to Sat 2<sup>nd</sup> Nov 2002 at Oba Akenzua Cultural Center Benin City. Pp 11.
- Ashworth, A (1988): Cost Studies of Buildings. Longman Scientific & Technical Longman Group. UK. Pg
- Ashworth, A. (2012): Contractual Procedures in the Construction Industry. Sixth Edition. Routledge Taylor and Francis Group. London and New York. Pp 130 & 131.
- Bathurst, P. E and Butler, D. A (1980): Building Cost Control Techniques and Economics Second Edition. Heinemann. London. Pp 15 – 17, 19 & 21.
- Bledsoe, J. D. (2002): Successful Estimating Methods from Conception to Bid. R<sup>s</sup> Means. Construction Consultants and Publishers. Kingston.
- Cartlidge, D. (2009): Quantity Surveyor's Pocket Book. Butterworth Heinemann. London New York. Pp 67, 36, 38 & 39.
- Dikko, H. A. (2015): Excerpts Presidential Address: 2015 Annual Conference of Registered Quantity Surveyors. Theme “Strategic Options for the Nigerian Quantity Surveyor in

- the next Two Decades” held on Thursday 17<sup>th</sup> – Friday 18<sup>th</sup> September, 2015 at President Shehu Musa Yar-Adua Centre, Abuja.
- Due Process Handbook: Public Procurement Act (2007).
- Ekpo, S. O. (2001): Controlling the Implementation of Highways, Roads and Infrastructural Projects Paper Presentation. Theme: Costing and Management of Highways Roads, and Infrastructure organized by the Nigerian Institute of Quantity Surveyors Tuesday 10<sup>th</sup> & Wednesday 11<sup>th</sup> April, 2001 at the Centre for Women Development, Abuja.
- Flanagan, R and Tate, B (1997): Cost Control in Building Design: Blackwell Science Ltd. London, USA, Canada. Pp 3, 7, 8.
- Geddes, S. (1996): Estimating for Building and Civil Engineering Works Ninth Edition. Williams, J. (Ed). Butterworth Heinemann. P 11. London, New York.
- Hard Castle, C. (1982): Capital Cost Estimating and the Method of Presenting Information for Pricing of Construction Work. In Brandon P. S. (Ed). Building Cost Techniques: New Directions. E & F. N. Spon Ltd. London & New York. P 373 – 375.
- International Data Group (2009): Value for Money Guideline. Accessed from <http://www.aid.gvt.nz/webfm - send/650> on 2nd October, 2015.
- Ishaya, G, Kola, B. A and Adogbo, K (2015): The Theoretical Link between Organizational Behaviour and Cost Advice Function of Quantity Surveyors via Project Teams. In: Laryea, S and Leiringer, R (Eds). Procs 6<sup>th</sup> West Africa Built Environment Research (WABER) Conference 10<sup>th</sup> – 12<sup>th</sup> August 2015, Accra, Ghana (1117 - 1130).
- Langdon, D. (2007), Aqua Group Guide to Procurement, Tendering and Contract Administration. Hackett M, Robinson I and Stathan (Eds). Blackwell Publishing Oxford UK, Singapore. Pp 125, 134.
- Mac-Barango, D. O. (2015): The Strategic Imperatives for Sustainable Development of the 21<sup>st</sup> Century Quantity Surveyor. Paper Presentation at 2015 Annual Conference of Registered Quantity Surveyors at President Shehu Musa Yar-Adua Centre, Abuja. Thursday 17<sup>th</sup> – Friday 18<sup>th</sup> September, 2015.
- Martin, B (2001): Value Engineering: Benchmark for Success. Chartered Surveyor Monthly. Jan 2001.
- Mogbo (2001): The Procurement and Financing of Roads in Nigeria Through New Private Sector and Government Initiatives. Paper Presentation: At the 2-Day Workshop on Costing and Management of Highways, Roads and Infrastructure: Organized by the Nigerian Institute of Quantity Surveyors (NIQS) from 10<sup>th</sup> and 11<sup>th</sup> April 2001 at the Center for Women Development, Abuja. Pp 4 and 5.
- Mogbo (2004). Project Management. Implementation, Evaluation, Co-ordination and Sustenance. Paper Presentation: At the Education Tax Fund (ETF) Zonal Workshop for Stake Holders, from 22<sup>nd</sup> to 26<sup>th</sup> November, 2004. Conference Hall, Education Resource Centre, Abuja. P 11.
- Mogbo, T. C. (2000): Civil Highway Projects. Implications on the Quantity Surveying Profession in Nigeria. Paper Presentation: 19<sup>th</sup> Biennial Conference organized by the Nigerian Institute of Quantity Surveyors. Theme: Quantity Surveying and Challenges of National Development held at Sheraton Hotel & Towers Abuja, Wednesday 15<sup>th</sup> – Saturday 18<sup>th</sup> November, 2000. P 1.
- National Economic Empowerment and Development Strategy. NEEDS (2003) Changing the Way Government Does its Work. Pp 86 – 88.
- NIQS (2000): Frame Work for Construction Contract Auditing (Practice Note 7). P 2.
- O’Neill, J. J. (1989): Management of Industrial Construction Projects. Heinemann Newness. Oxford, London. Pp 127, 133, 88.

- Oforeh, E. C. (2004): Cost Management of Civil Engineering Roads & Highways Projects. Paper Presentation: 2-Day Seminar on Contract Administration and Project Management held on 5<sup>th</sup> & 6<sup>th</sup> April, 2004 at Airport Hotel Ikeja, Lagos. Pg 14
- Ogunsemi, D. R. (2015): Value for money in Construction Projects. The Quantity Surveyor's Quest. Inaugural Lecture Series 71. The Federal University of Technology. Akure. P 22.
- Oladapo, M. A. (2008): A Model for Cost Management of Public Private Partnership Procurement Projects. Paper Presentation: 2-Day Seminar on Contract Administration and Project Management held on 5<sup>th</sup> & 6<sup>th</sup> April, 2004 at Airport Hotel Ikeja, Lagos. Pg 10-12
- Seeley, I. H. (1996): Building Economics: Appraisal and Control of Building Design Cost and Efficiency. Fourth Edition. Macmillan UK.
- Tinacle, W. (2001): It is at the Heat of Local Authority's Best Value Strategy. Chartered Surveyor Monthly. October. P24
- Wahab, K. A. (2003): Effect of Budgetary Planning and Contract Auditing. Paper Presentation at the 2-Day Seminar on Critical Issues in the Management of Construction Cost, Claims & Disputes organized by the Nigerian Institute of Quantity Surveyors (NIQS) held at the National Centre for Women Development, Abuja on 15<sup>th</sup> / 16<sup>th</sup> May 2003. Abuja University of Lagos Guest Houses & Conference Centre, Lagos on Monday 26<sup>th</sup> & Tuesday 27<sup>th</sup> May, 2003. P 7.