

## **Cost Control and Multilateral Financing of Engineering Projects in Nigeria <sup>1</sup>**

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### **ABSTRACT**

The construction industry being solely responsible for economic growth of the nation will base on the government's fiscal policy and budget the formulation of its own policy plan on how to carry out development within that budget and equally give the nation a healthy developed environment. Besides, the overall aim of cost control and management is to make sure that scarce resources are utilized to the optimum benefits of the main parties to a construction contract. That means that design and execution of a project should produce maximum value for money. Given therefore, the high cost rate of money for construction resources and high interest in this dwindling, deregulated and depressed economy, it is pertinent that efficient costing should be a very strong element in project design and implementation. The study evaluated cost control techniques and multilateral financing of engineering projects in Nigeria. The economic aspects of construction are complicated by the fact that the functions of design and production are generally separated. At the design stage, the designer will usually not know the methods and equipment available to the contractor who may ultimately build the project, and who is directly responsible for the materials used, which for most buildings account for about two-thirds of the total cost of the project.

The need to have cost data available from the earliest stages of the design has encouraged the development of methods of "cost planning" and the wider application of such techniques if cost is to become as it should be, an integral part of design. All these should be geared towards effective cost management and control as a solution to project abandonment.

Management is a leading factor in any investment. Prosperity breeds mismanagement. Paradoxically, management is the single factor which forces an upturn in a recession. Management is the single factor which separates prosperity and recession. It is the resources well managed or mismanaged today that makes for tomorrow's prosperity or depression. The economic depression we are now facing is more out of mismanagement of resources than lack

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<sup>1</sup> How to cite this paper: Okereke, R. A., Ejekwu, T. B., Ohamma, V. O. (2020). Cost Control and Multilateral Financing of Engineering Projects in Nigeria; *PM World Journal*, Vol. IX, Issue IV, April.

of resources. The key to the success of our construction investment industry is professional management. There is urgent need for innovations in the cost management of our construction resources for viable products. The vital question however is whether the Project Manager being the construction cost planner is economizing enough the variables that affect the cost of construction which are supposed to be under his control in order to bring down cost of construction to a tolerable level. This is the main focus of the study to unveil the management philosophy, practice and inputs to be affixed in evaluating and monitoring construction cost in order to reduce project abortion and abandonment, which are caused by project cost overruns.

## **1.0 INTRODUCTION**

In Nigeria, many construction Projects development have failed owing to the various technical and financial pressures of cost limit, quality and value optimization. Jagboro and Banalola (2005) wrote that the interim report of the Presidential panel on contracts at the wake of the present democratic government in Nigeria confirmed a staggering amount of over four hundred and fifty billion naira for project which can be classified as failed contracts, spanning from 1979 to 1998. The main reason for this is not far-fetched as many of the professional firms involved in project administration lack adequate management inputs in both quantitative and qualitative terms.

Another reason for this high rate of projects abandonment and failed contracts in Nigeria, is that in most government projects, the mobilization fee which is given to the contractor is reimbursed to those who awarded the contract as "bribe" usually of huge sums of money and this thereby increases the cost of the project, affects the quality of job executed by the contractor and will also leave the project either unexecuted or abandoned. This is because the money meant for the project execution have been diverted into individual pockets (Osemenam, 2004).

However, the design of building and other infrastructure is predicated on different contributors exhibiting various professional skills with a view to obtaining an optimum design solution. These inputs are based on the understanding of design and execution parameters ranging from functionality and usefulness of the project, aesthetics and appearance, safety of the structure, quality of workmanship, cost and financial matters and most importantly clients satisfaction with the project on completion. Business everywhere is faced with everyday challenges for survival and the need to adapt is very important. Appointing the project manager at the right time and seeking his professional advice for cost matters is a very key problem in the Nigerian construction delivery.

Finance is the application of a series of economic principles to maximize the wealth or overall value of a firm (business) i.e. to make the highest possible profits at the least risk (Nikbakht,

1990). Finance has developed many sophisticated approaches to provide financial managers with tools for solving difficult business problems: managing working capital, maintaining financial records, interpreting balance sheets/income statements. Currently finance has extended its practice horizon to budgeting scarce resources effectively and to design, source and invest funds in the assets or projects that yield the best risk/return trade-offs often termed “financial engineering”. Financial records analysis provides a means of flexible judgment for making the right investment decisions at the right and most advantageous time. Financial managers have responsibility to find the best and least expensive sources of funds and to invest these funds into the best and most efficient mix of assets. In doing this, they seek/find the mix of available resources that will achieve the highest return at the least risk. Financial managers/cost engineers consider the effects of changing supply, demand, and price conditions and other general fiscal/monetary policy directions (i.e. micro/macro-economic factors) in designing funding and operating conditions of their projects, specifically in determining when it is best to issue stock, bonds, or other financial instruments.

**Micro Economic Factors:** In micro project consideration, the sale of products (of a project) at a profit depends heavily on how well the managers are able to analyze and interpret supply and demand conditions to control production costs and hold costs down so that prices can be set at competitive level. For instance, to obtain the best machinery, material, and labour factors at economic costs to squeeze out the biggest possible profit under given supply conditions. The choice of one machine over another involves considering the risks associated with each machine. Maintaining a low-cost operation will enable the firm to charge competitive price for its product and maintain its market share while still obtaining a reasonable return. On the revenue side, understanding and promptly responding to changes in demand allows the proactive cost engineer/financial manager take full advantage of market conditions – when to raise and/or lower prices or apply liberal credit terms to increase sales and reduce finished goods inventories.

**Macro-Economic Factors:** Cost engineer and financial manager must develop a flexible strategy to deal with internal/external factors that could result in major shifts in demographics, changes in legislation or tax laws and new technological breakthroughs. They must engage in financial planning so that they can be armed with different alternatives under different economic conditions.

## 2.0 LITERATURE REVIEW

### PROJECT COST CONTROL IN NIGERIA

The term "cost" is ambiguous since it has several different meanings to different persons. To a financial or cost accountant, it means the main elements which go to make a product, hence

basically classifying cost into material, labour and equipment cost. Hanson (2004) defined cost as "the cost of producing a certain output of a commodity. It is the sum of all the payments to the factors of production engaged on the production of that commodity". Enyi (2007) refers to cost as "the expenses incurred on the course of realizing a revenue or implementing a project, this cost are fixed, variable and semi - variable in nature" To the "Pure" economist, cost must be viewed in realistic terms, in which case the real cost of any product or services is the cost of the alternative that was foregone. For instance, if a client has amount of money say N1,000,000.00 and is faced with the choice of erecting a residential building or a factory and the said client settles for the residential building, the real cost of the residential building is the factory that was forgone. The principles of barter economics (without the use of money) is very explicit and respected in this approach. Besides, as stated in the oxford dictionary that cost is the price to be paid or amount of money needed for something, this means that cost is the actual liquid cash or money required for an exchange of goods and services. However, with respect to building works, Ferry 2004 highlighted that cost signifies cost to the client as distinct from the cost of labour, plant and materials incurred by contracting and sub-contracting organization. Hence, it implies the amount which the client will have to pay the contractor to construct the building but not the actual cost to the contractor of building it. Precisely, it is the amount paid by the client for either completed building or for specific section of building. Moreover, Ofoh and Alufohai (2006) wrote that "to the construction economist, the products of the industry are regarded life objects that remain active throughout their life span. In the process of its existence or activity, some other elements of costs arise, aside from the initial costs. The true cost of a project therefore is an integral of the birth and lifetime cost of the project analyzed over anticipated and defined minimum quality or standard of performance." On the other hand, management as defined by Stoner and Wankel is "the process of planning, organizing, leading and controlling the efforts of organizational members and of using all other organizational resources to achieve stated organization goals. Hall (2007) in his write up, defined management broadly as "getting things done through other people" so as to include top management and lower level management. Thus, there are many systems, techniques, approaches and tools of management. Management includes subjects like human relations, operational research, quantitative techniques, project management, Administration etc.

Thus, from the above definitions and reviews of cost and management, "the concept of cost management" in this research work is concisely defined as the process of utilizing the construction cost related resources of the construction sub-designated objectives. This definition treats the subject matter as a process of getting things done through working with people and using other resources. This is a fact because no project success can be achieved without proper integration of the project organization and actors. More so, it has been well established that the activity costs otherwise known as maintenance costs or cost - in - always affect the initial cost of a project in many ways consequently, various initial costs may be

possible for the same project subject to the quality and performance anticipated. Therefore, the approach of the construction economist is based on both the realistic and actualistic concepts against a background of identifiable performance related factors considered over time. This approach is the basis of cost planning executed by project managers on individual projects at the micro economic level of construction. Subsequently, apart from decision making, the task before the Project Manager can broadly be classified into cost planning and cost control.

**COST BUDGETING:** The concept budget defines the translation of an organizational plan into concrete form by way of resources allocation in form of cash. A budget is made up of two sides - Expenditure and Revenue. Just as budget have been used to plan country's economy, firms have been compelled because of the growing complexity in the construction industry to draw up budgets. It is through budgets that plans can be executed. Budgets are used to convert such plans and policies into qualitative and monetary terms which form the fundamental objectives of the firm. The process of budget estimates is used by firms to decide on policies of either expansion, contraction or maintaining the statuesque. It is this process which helps to shape the policy of the firm as regard future line of action depending on the market situation. The execution of any project by a contractor requires cost control.

Cost control is done by way of project planning and scheduling using different types of qualitative techniques available to the industry. The logic of these planning is to enable the contractor to exercise an effective control over his resources. It is the duty of the management team to ensure that tasks are carried out in accordance with the planned line of action. Fresh plans are prepared when changes are necessary and unavoidable. It is the desire to achieve these planned lines of action that a system of monitoring has to be initiated.

**COST MONITORING AND CONTROL SYSTEM:** Controlling and monitoring of projects occurs when you establish ways to track the course of all activities and events in the project. As project is always a dynamic entity since it must respond to changing conditions if it is to be completed successfully. It is carried out in an environment of ceaseless change and there is a continual need for re - assessment and re-appraisal of the project plan. Among the factors liable to alter the course of a project includes such changes in:

- The technical specification of the project.
- The project complete date.
- Budget considerations.
- Relative priorities of projects.
- Revision of activity duration estimates.
- Re-assessment of resource requirement for individual activities.
- Technical difficulties or construction methods.
- Unexpected weather conditions.

- Working conditions
- The economy
- Resource availability
- Management and among others.

However, some of these changes will have a pronounced impact on the project while others have a mere subtle one. Either way, the changes could affect the project in terms of quality, quantity of work, cost and time. To fully avoid this, a proper cost monitoring and control system must be established. At the onset, there is an important difference between monitoring and control. Monitoring is finding out the state of play. It is has to do with reporting whether one is measuring money or time or any other property in which one is interested. It is a vital pre-requisite to control but it is a tool needed by control rather than a substitute for it. Control is taking whatever steps that are necessary to vary or alter a pattern of events. It is a positive and active operation which its success can be judged by subsequent events. Taking decisions in the exercise of control demands sound information which is the result of good monitoring.

**SCHEDULE MONITORING:** When a project is monitored to determine if everything is proceeding as scheduled, data collection along the following lines is necessary in order to detect the type of problems one might likely encounter:

- Collect information on any differences between estimated start dates and actual start dates for each activity.
- Determine any differences between estimated finish dates and actual finish dates for each activity of the entire project.
- Any unexpected delays or other abnormalities that alter the project's completion date.
- Any activities performed out of network sequence.
- Any milestone activities that appear unachievable.

Once the above stated information is collected and analyzed, a series of actions to rectify any situation can be performed. For example, a schedule can be updated by re-assessing the duration of specific activities or one can re-sequence or eliminate activities reflected in the current version of his/her programme chart.

**RESOURCE MONITORING:** To complete a project, three main resources are usually expanded: man, materials and equipment. When left uncontrolled, the cost associated with utilizing these resources will likely escalate, so there is a need to really track closely the use of these resources. Resources utilization could be determined in basically three ways: meeting, inspections and forms. Meetings (especially site) provide one with the opportunity to acquire information rapidly. Inspections allow one to witness what and how certain resources are being used by staff and other subordinates. While forms allow one to quantitatively determine the

amount of resources being used and the cost associated with using those resources. In addition, forms serve as an excellent historical record on what occurs throughout the project.

**BUDGET MONITORING:** A project is monitored to determine whether the progress is proceeding according to budgeted plans and one of the aims is to determine the overall financial condition of the project. This could be accomplished by detecting quantitative variation at any given point in time, either for a specific activity or the entire project. One can accumulate cost data from a series of sources, usually related to manpower, materials, overhead and other changes, compare the actual accumulated data for a particular activity or the entire project with the estimated cost. Analyze any difference variances and take such actions as curtailing resources devoted to a project on selecting alternative materials.

**COST CONTROL:** Control is defined as to check, verify or regulate. Planning enables management to establish realistic standards against which performance can be matched during contract. Cost control is used to maintain the cost within the budget by forecasting the expected cost through frequent short-term planning exercises. Olateju (2003) emphasizes that the main objectives of monitoring and control are to ensure that the overall period of completing a project is not exceeded and this is achieved at the minimum cost.

**MATERIALS COST CONTROL:** The prime purpose of material costing is to ensure that purchases do not exceed the planned distribution of budgeted expenditure for the project. As reported by Ibrionke (2004), the building establishment defines material control as covering realistic design, specification and procurement of good, their packaging, handling, storage and protection after fixing. The procurement of material is based on the material schedule already prepared during pre-contract planning so that any shortfall or excess can easily be determined during the project execution. Recovering report form, purchase order, material (store) requisition form are typical standard documents needed for material monitoring and control. Other important documents are invoices, delivery notes, advice notes, among others. All these are to ensure good financial discipline and proper material cost control.

**LABOUR COST CONTROL:** This involves the use of labour time and cost reports. Labour timecard reports the hours of time for every trade man and the project cost codes to which the labour is applied. Also, the foreman or supervisor should record the hours spent by site labour. The total gross payroll can then be debited to a labour variance account on a weekly basis and the weekly summary of man hours spent on each activity can be used to debit the labour cost to each activity account. The total of these debits can then be credited to the labour variance account. This man-hour has a dual purpose in placing the proper perspective on labour costing both for project control and for future estimating.

**EQUIPMENT (PLANT) COST CONTROL:** Since equipment costs are usually expressed as a time rate of expense, time reporting is an important step in equipment cost reporting (Udoh

2004). The procedure for the preparation of equipment cost report is similar to that of labour. Equipment cost are matched with the corresponding quantities of work produced. The reports tend to summarize all equipment cost incurred on the project up to the effective date of the report. It helps to compare the estimated (as in plant schedule) with the actual equipment unit cost for each type of work.

**SUB – CONTRACTS:** Subcontract performance and costing would be treated as a similar fashion to materials. Separate orders would be issued for each service to be performed and the accounting would be identical. It is essential in this case that the sub-contractor in submitting his quotation is made fully aware of the implications of the system and of the effect on the project duration of his activities. In addition, certain specific event or milestones should be included in the network for an assessment of the sub contractor's performance and his progress payment would be tied to these control events. During the execution of the contract, it is necessary for all parties to cooperate in any desirable re-planning and to define and evaluate variations promptly so that modifications may be incorporated into the networks timely.

**OVERHEADS AND INDIRECT COSTS:** Overheads and indirect cost are as much part of the project as the direct cost just described. Examples of indirect cost are cost of project services (Telephone, mail office, maintenance, utilities, indirect labour (materials handling, production control, etc) and other functions or area making a cost contribution to the work packages which may be difficult to measure directly. Many firms handle these costs by adding a fixed percentage to the direct cost of a work package or by distributing them pro rata (in proportion) to the total cost of the work package.

However, the tools used by management and cost supervisors for planning, monitoring and controlling of projects include among others.

- The Gantt chart and
- The network analysis which comprises – Critical path method (CPM) – Performance evaluation and review techniques (PERT)

**THE GANTT CHART:** Gantt Charts (commonly wrongly called gant charts) are extremely useful project management tools. The Gantt Chart is named after US engineer and consultant Henry Gantt (1861-1919) who devised the technique in the 1910s. Gantt charts are excellent models for scheduling and for budgeting, and for reporting and presenting and communicating project plans and progress easily and quickly, but as a rule Gantt Charts are not as good as a Critical Path Analysis Flow Diagram for identifying and showing interdependent factors, or for 'mapping' a plan from and/or into all of its detailed causal or contributing elements. You can construct a Gantt Chart using MS Excel or a similar spreadsheet. Every activity has a separate line. Create a timeline for the duration of the project (the breakfast example shows minutes, but normally you would use weeks, or for very big long-term projects, months). You

can colour code the time blocks to denote type of activity (for example, intense, watching brief, directly managed, delegated and left-to-run, etc.) You can schedule review and insert break points. At the end of each line you can show as many cost columns for the activities as you need. The breakfast example shows just the capital cost of the consumable items and a revenue cost for labour and fuel. A Gantt chart like this can be used to keep track of progress for each activity and how the costs are running. You can move the time blocks around to report on actual versus planned, and to reschedule, and to create new plan updates. Costs columns can show plan and actual and variances, and calculate whatever totals, averages, ratios, etc., that you need. Gantt Charts are probably the most flexible and useful of all project management tools, but remember they do not very easily or obviously show the importance and interdependence of related parallel activities, and they won't obviously show the necessity to complete one task before another can begin, as a Critical Path Analysis will do, so you may need both tools, especially at the planning stage, and almost certainly for large complex projects. A wide range of computerized systems/software now exists for project management and planning, and new methods continue to be developed. It is an area of high innovation, with lots of scope for improvement and development. I welcome suggestions of particularly good systems, especially if inexpensive or free. Many organizations develop or specify particular computerized tools, so it's a good idea to seek local relevant advice and examples of best practice before deciding the best computerized project management system(s) for your own situation. Project planning tools naturally become used also for subsequent project reporting, presentations, etc., and you will make life easier for everyone if you use formats that people recognize and find familiar.

**THE NETWORK ANALYSIS:** Network analysis is a method of planning and controlling cost by recording their inter-dependency in a diagrammatic form that enables each fundamental problem involved to be tackled separately. Network analysis techniques achieve their purpose in three broad steps: (A) They present a diagrammatic form and picture of all the jobs (or activities) to be done and of their dependency on one another. (B) They consider the limitations imposed by the availability of estimate and the time required to do each job. (C) They apply the estimated job time to the network diagram and then analyses the network. Analysis in this case means the calculation of the total length of time involved in path through the network. Network analysis comprises the critical path method (CPM) and the performance evaluation and review techniques (PERT). The CPM network diagram unlike the Gantt chart provides enough detailed information to assess the effect of a delay associated with any particular phase or activity. The CPM diagrams provides more "Micro" information than "Macro" information i.e., it provides more specification to evaluate the progress of a project. The major advantage of the CPM is the clear identification of the critical and non-critical activities which helps in the diversion of construction resources when necessary especially when there are delays in critical activities. The performance evaluation and review techniques (PERT) is best for new and complex projects with extreme degree of uncertainty. To update CPM diagrams, one need

to collect information, otherwise the diagram becomes merely a historical document rather than an action tool. One can collect information from many sources including existing documentation, meeting and discursion with project participants.

**ENGINEERING PROJECTS FINANCING:** Project financing is a technical term used to describe the financing of infrastructural project and industrial projects with long time duration. Project finance is the extension of credit to finance an economic unit where the future cash flows of that unit serve as collateral for the loan (Christopher and Forrester, 2010). HSBC describe project financing as raising of finance on a limited recourse basis, for the purposes of developing a large capital-intensive infrastructure project, where the borrower is a special purpose vehicle and repayment of the financing by the borrower will be dependent on the internally generated cash-flow of the project. An important characteristic of project financing is that the sponsorship of the project is based on the projected revenue that the project could accrued (cash flow) rather than the project initiated capital base. There are a number of project executed in Nigeria by this concept, most of which were initiated by the government. The most successful of them was the building of a second local Airport terminal in Lagos named Muritala Muhammad Airport 2 (MMA2). The project was executed on a land area of 20,000 sq.m, details of the project included the design followed by the construction of the airport terminal building, a multi-story car park and an apron. The contract was awarded to Bi-Courtney Limited as a Public Private Partnership (PPP) Concession under a lease contract of Build and Operate (BOT) for a period of 35 years.

MMA2 project has since been completed and it has been in operation since 2007 immediately after the terminal building and the adjoining roads were completed, the project company Bi-Courtney started collecting fares from users, which is expected to last for 35 years of the concession period after which the project will be handed over to the federal government. By that time the company must have gotten a full payback of its investment and made enough profit to justify their investment. It was executed at an estimated cost of \$200million of which about \$150million was physical asset investment. A major chunk of the capital was sourced from six local banks in Nigeria (Yong, 2010). The major fair in project financing in Nigeria is the subject of risk, this is so important as the project contract is signed in hope that everything will work according to business plan. News of violence civil unrest to kidnappings and destruction of properties are not uncommon about Nigeria. This research work is aimed to answer the following questions: What are the specific risks in project financing contract in Nigeria, what can be done to mitigate the risk, and what is the success story of the implementation of project financing in Nigeria. The research is executed by discussing the underlying principle of project financing, analysis of the risk factors in project financing and projecting a positive future outlook to the implementation of project financing in Nigeria by highlighting how to mitigate likelihood risks.

Major components of project financing are: Equity investors which could be referred to as ‘sponsors’ as well as financial institutions (banks) which could make loans available for operations. Capital for project financing are termed no-recourse loans, as the project itself serves as the collateral and the loan is serviced by the project cash flow and not the general assets or project sponsored credit worthiness (Hoffman, 2007). Government sponsored enterprises and various multilateral Agencies also provide project financing especially in infrastructure related finance in developing countries (Christopher and Forrester, 2010). Government are looking up to Public-Private Partnership (PPPs) to radically improve infrastructure network in their countries and enhance service delivery to their people. This aspiration is with the hope that this form of finance model gives room for government to share risk and responsibility with private firms but ultimately retains control of assets. This gives room for improved services, and also avoiding the pitfalls for privatization, unemployment, higher process and corruption.

Extractive mining, telecommunication, transportation, entertainment and sports are traditional areas where project financing is mostly used. In Nigeria, its application has been in the transportation sector, but with the poor maintenance of the federal government football stadia across the country, plans are in top gear to lease the stadia to private bodies as a concession for management and improvement. There are also cases of independent private real estate development in Nigeria major cities that are been implemented on the basis of project finance model. The most common form of project financing contract is the “Engineering, procurement and Construction (EPC) contract”. The contractor is handed over an Engineering design which he is expected to build and deliver at a certain date on a predetermined fixed price. Basic components are: Project description, price, payment, completion date, completion guarantee, Liquidated Damages (LDs), performance guarantee LDS and cap under LDs. Another form of project financing is “Operation and Maintenance Agreement (O&M)”. Here a project company allows another company that has expertise in an industry to operate and maintain the project under the O&M agreement contract, alternatively the project company could also operate and maintain the project but with a technical assistance of an experienced company.

Christopher and Forrester (2010) classified risk as either financial or non-financial and that the nature of risk depend on the stage of execution of project. In the course of construction, risk can be seen in workers compensation, labour, delays, environmental risk, cost overruns, quality compromise, destruction of properties either by acts of natural occurrence, vandalism or even terrorism. After completion of a project, risk could come in the form of loss of revenue from the business as a result of interruption or discontinuity of business. This is particularly important as repayment of the cost of the business depend on its cash flow .Insecure property rights, political risks, capital control, labour dispute and financial risks like changes in exchange rate, and interest rates are also some other example of risks that could come up after

completion of the project. On a broad level, financial risk can be itemized into five categories: (i) market risk, this is the risk that market condition can cause the value of an investment to decline. (ii) Interest rate risk, this is occasioned by changes in interest rate, (ii) inflation risk, this is the risk that return on investment will not out-pace inflation (iv) Exchange rate risk, this is the risk that exchange rate will have adverse effect on investment returns. Political risk, this is the risk of uncertainty in a country as a result of leadership decision. Since the research is about project financing risk in Nigeria where political risk is high as in other developing countries, a further break down of risk is given below in reference to World Bank's worldwide Governance Research Indicators: Voice and accountability of the government, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. Some researchers sees the likelihood of investment risk in a country or geographical location as a good reason for the recommendation of project financing. Kleimeire and Megginson (2000) asserts that the higher the political risk of the host country, the more likely is project financing. This assertion is in-line with the submission of Qian and Strahan (2005) that the use of private financing can be used to mitigate risk that is common in countries with poor functioning institutions. Hainz and Kleimeier (2006) developed a double moral hazard model that predicts that the use of project finance increases with political risk of the country in which the project is located and the influence of the lender over the political risk exposure. The prediction of this model was found to be true, the research also provided evidence that multilateral development banks act as "political umbrella" It thus implies that project financing is a tool for risk mitigation in the financing of projects. The business environment should however be well studied during feasibility studies to take note of the likelihood of risk so that mechanism to mitigate such risk can be designed ahead of time. An example of a life situation of how contract can be written to mitigate risk in Africa is the Sasol (A South African Petrochemical group) project in Mozambique. Sasol asked for a hybrid project finance structure that is seen as unique. Lenders have full recourse to Sasol which means that the company assumes almost all project related risks, but the exception is on political risk, and in the event that it occurs, the lender reserve the rights to switch from the full recourse structure to a project finance structure (Farlan, 2005).

## **MULTILATERAL DEVELOPMENT BANKS**

A multilateral development bank (MDB) is an institution, created by a group of countries, that provides financing and professional advising for the purpose of development. MDBs have large memberships including both developed donor countries and developing borrower countries. MDBs finance projects in the form of long-term loans at market rates, very-long-term loans (also known as credits) below market rates, and through grants.

The following are usually classified as the main MDBs:

- World Bank
- European Investment Bank (EIB)
- Islamic Development Bank (IsDB)
- Asian Development Bank (ADB)
- European Bank for Reconstruction and Development (EBRD)
- CAF - Development Bank of Latin America (CAF)
- Inter-American Development Bank Group (IDB, IADB)
- African Development Bank (AfDB)
- New Development Bank (NDB)
- Asian Infrastructure Investment Bank (AIIB)
- Arab Petroleum Investments Corporation (APICORP)
- Eastern and Southern African Trade and Development Bank (TDB)

There are also several "sub-regional" multilateral development banks. Their membership typically includes only borrowing nations. The banks lend to their members, borrowing from the international capital markets. Because there is effectively shared responsibility for repayment, the banks can often borrow more cheaply than could any one member nation. These banks include:

- Caribbean Development Bank (CDB)
- Central American Bank for Economic Integration (CABEI)
- East African Development Bank (EADB)
- West African Development Bank (BOAD)
- Black Sea Trade and Development Bank (BSTDB)
- Economic Cooperation Organization Trade and Development Bank (ETDB)
- Eurasian Development Bank (EDB)

There are also several multilateral financial institutions (MFIs). MFIs are similar to MDBs but they are sometimes separated since they have more limited memberships and often focus on financing certain types of projects.

- European Commission (EC)
- International Finance Facility for Immunisation (IFFIm)
- International Fund for Agricultural Development (IFAD)
- Nordic Investment Bank (NIB)
- OPEC Fund for International Development (OFID)

- International Bank for Economic Co-operation (IBEC)
- International Investment Bank (IIB)
- Arab Bank for Economic Development in Africa (BADEA)

### **3.0 RESEARCH METHODOLOGY**

The research was carried out using a qualitative method of research, and the research design is literature review and interviews. Articles on cost control and multilateral financing were reviewed with emphasis on engineering projects. This study was done using Nigeria construction environment as a case study to determine the likely hood of mismanagement of funds and how to mitigate them. Collected data were analyzed qualitatively.

### **4.0 RESULTS AND DISCUSSION**

Since the evolution of cost management and its subsequent application in the engineering industry, the practitioners/consultants have desired numerous benefits from the effectiveness thus commending it for it's more functional and practical approach to cost control of engineering projects.

Various management techniques especially planning have been developed. Such planning tools like the Network analysis and bar-chart have helped in the early planning of construction projects on which the application of other cost project management techniques are based. As the work progresses on the site, more planning like - term planning is carried out so as to maintain the initial programme. Such techniques like organization, supervision, implementation and control are equally applied on already plan so as to make sure that there are no deviations on the original master programme.

The rising cost of building materials nowadays and the ultimate astronomical increase in the cost of construction projects calls for adequate application of cost management principles so as to reduce or eliminate the cost of projects. When management techniques are appropriately utilized during the construction of any price of work right away from the planning stage to the completion period exhausting all other principles of cost management, the cost of such a scheme must be within the target cost.

Most of the abandoned building projects are as a result of poor or total lack of project management and as such no cost control of such schemes. The teaching of project management in line with cost control measures should be therefore be included in the programmes in the training of the professionals especially the Quantity Surveyor whose knowledge of cost outweighs any other professional in the building industry. Therefore, construction industry will

continue to experience peace if project management being a tool modeled to control cost of projects is strictly adhered to.

## **5.0 CONCLUSION**

It is the resources well managed or mismanaged today that makes for tomorrows prosperity or depression. The economic depression we are now facing is more out of mismanagement of resources than lack of resources. The key to the success of our construction investment industry is professional management. There is urgent need for innovations in the management of our construction resources for a viable product as the relationship between inflation and cost of construction is directly proportional. However, in the type of economic environment x-rayed in the above chapters, the point has been made clear that the task before cost managers of the construction industry under such conditions are more difficult than in normal conditions. Nevertheless, it creates special challenges for managers of construction cost and/or industry to ensure the survival and structural strength of their organization. This can be achieved only through optimal use and management of construction resources.

## **6.0 RECOMMENDATION**

In order to achieve the tremendous benefits of cost management as means of cost control, the cost manager must adhere strictly to the information contained in the overall programme chart and make changes where ever necessary and applying both his personal experience and intelligence at the same time. All other professionals, operatives and even the client should be capable of carrying out their own part of the task effectively and in time too. The cost manager (e.g. the Quantity surveyor trained specifically for the purpose) should also exhibit the foresight of an average reasonable man in predicting and arresting those inherent constraints that are associated with engineering projects which may either retard the progress of the work or extend the pre-determined project duration. He should carry out his function with reasonable care and skill.

To this end and in line with the research questions stated earlier, I recommend the following solutions or strategies as a means for improving capital project management under the current economic situation in Nigeria.

- The need for change management: Cost managers of construction industry should enhance the inevitability of change because predicting business outcomes in a volatile and depressed economic environment is unquestionable and a herculean task. Hence, they should therefore design suitable framework for change management by evolving techniques which could assist in assimilating and adapting to changes.

- Effective cost planning, monitoring and control should be vigorously pursued by both the client and the contractor as this will help to keep track of progress in implementation of project in relation to targets, timely removal of constraints and corrective actions taken as required. This is because we cannot keep productivity at a high level in the construction industry without adequate planning of the business. To this end, whatever the level of uncertainty, we just cannot do without planning.
- Application of the framework and the implicated tools will imbue the Quantity Surveyors with knowledge, skill and confidence to become major players in the development and management of the nation's infrastructures to reduce risk, reduce cost, enhance economic development and add-value to the national economy.

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