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UNMASKING THE TOWER OF BABEL AND THE SCOURGE OF ABANDONED PROJECT IN NIGERIA

By

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1.0 Introduction

Mr. Vice-Chancellor Sir, Distinguished Ladies and Gentlemen, all other protocols duly observed. It is with great pleasure that I stand before you to give this inaugural lecture titled "Unmasking the Tower of Babel and the Scourge of Abandoned Projects in Nigeria". This lecture is very unique being the first ever to be given by an academic staff from the Department of Quantity Surveying. My journey to Ile-Ife started after I was lured into teaching in 1980 by the then Head of Department of Surveying, Ahmadu Bello University Zaria; being one of the best three graduating students with second class upper in a class of thirty in 1978. However, the incessant religious volatility in the North prompted my decision to relocate to the then University of Ife, now Obafemi Awolowo University in 1985. That decision which I made about thirty years ago is what has brought us to today's event.

2.0 The Ghost of the Tower of Babel

According to Habermehl (2011) the generations of people before the flood of Noah had been interested only in themselves as supermen. They also used violence and force against their weaker neighbors, paying no attention to laws and rules. But the new generation of mankind after the flood was different. They all spoke one language, understood one another very well and had everything in common. Had they confined themselves to this social life, all might have been well. With time they began to multiply in population and in pursuit of shelter, which has been an age long quest of humanity; they decided to embark on a settlement plan. Documented in chapter 11:1-8 of the book of Genesis it says:

> *And they said one to another... let us make brick, and burn them thoroughly. And they had brick for stone, and slime they had for mortar. And they said...let us build us a city and a tower, whose top may reach unto heaven; and let us make us a name,*

lest we be scattered abroad upon the face of the whole earth. And the LORD came down to see the city and the tower, which the children of men built. And the LORD said, behold, the people is one, and they have one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do. Go to, let us go down, and confound their language, that they may not understand one another's speech. So the LORD scattered them abroad upon the face of all the earth and they left off to build the city.

Mr. Vice Chancellor Sir, many religious adherents see the Tower of Babel as connoting a revolt against the supremacy of God, hence the reason for the termination of the project. Today my quest is not to add to the confusion arising out of disobedience, but my discourse will be restricted to construction and contractual issues. It was obvious that the construction of the new city and a cascaded tower reaching into the sky was commenced with great excitement during the foundation stone laying ceremony. But to the dismay of many, there was never a commissioning of the project due mainly to the abrupt abandonment of the project. Photo1 shows Pieter Bruegel the Elder's Illustration of the Tower of Babel. Though this picture is at best one man's idea of what the project seemly appeared to be; it nevertheless gives us a vivid insight into the sheer magnitude of the material resources and the different tasks that were required to complete such a huge project.

Photo 1: Pieter Bruegel the Elder's Illustration of the Tower of Babel, (Vienna) Google Art Project. Edited jpg 14th August 2015

Stripped of its biblical mysticism; this traumatic story of a failed construction project was an attempt by humanity to remain united.

3.0 Developmental and Contractual Perspective of the Tower of Babel

Millennia after the great confusion of the Tower of Babel researchers are still carrying out the post mortem analysis to ascertain the actual root cause of its abandonment. This lecture is my little contribution to this human quest to expand the scope of our investigation. As a construction expert and particularly a quantity surveyor; it is my considered opinion that design and contractual issues could have resulted in the abandonment of the Tower of Babel. The starting point of any construction project is the client seen by many as the major stakeholder among others. Gilb (2005) defined a stakeholder as "any person, group or object, which has some direct or indirect interest in a system". Stakeholders can also exercise control over the immediate system operational characteristics, as well as over long term system lifecycle considerations. This may include but not limited to

lifecycle costs, environmental considerations and decommissioning of the system.

It is highly essential that the views of stakeholders are sought for at the early stage of the design process in arriving at critical milestones in the execution of construction projects. Stakeholders could also specify requirements, directly or indirectly, for the system attributes; including function, performance, resources, design constraints, and condition constraints. By so doing they ultimately determine the degree of product or system success or failure. In this regard professional participants and consultants should determine which requirements the stakeholders need, and which requirements they can afford. This should be emphasized even if stakeholders are not currently conscious of these needs and limitations. Finally, stakeholders can be internal and external to a system, depending on the context. Quite often external stakeholders include government organizations that can impose planning controls and other regulatory requirements affecting the system under consideration.

The case of our Tower of Babel was different, no evidence exists to suggest that God; a major stakeholder in man's creative process was actively involved in the conceptualization of the city. Nevertheless, in the exercise of his omnipotence God came down supposedly from the 'sky' to observe the state of affairs on the construction site. Just as the consultants will normally do during site meetings, he took note of a number of issues as he inspected the works. He observed that a number of things were out of order. There was no assurance as to the availability of the huge material resources required for the project. What about the supply of the varying labour force and the appropriate mix required at different stages of the work? What about the technical resources and; the managerial capabilities to complete and manage the city? Besides we know nothing about the architectural and structural drawings detailing the layout of the city. If they were, who vetted and approved them before the commencement of work on site? Were there registered and certified engineers who evaluated the

structural stability and pontificated on the consequences of the rising tower into the sky? What of the mechanical and electrical systems required for optimal functionality of the entire city?

Today's skeptics might dispense with the naiveties of those stringent building requirements and approvals under such primordial epochs. We should however remind ourselves that Noah's Ark which was constructed at a much earlier period surprisingly met those stringent requirements. This is well documented in Genesis 8: 12-16;

> *And God looked upon the earth, and behold, it was corrupt; for all flesh had corrupted his way upon the earth. And God said unto Noah, the end of all flesh is come before me; for the earth is filled with violence through them; and behold, I will destroy them with the earth. Make thee an ark of gopher wood; rooms shall thou make in the ark, and shall pitch it within and without with pitch. And this is the fashion which thou shall make it of: The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits. A window shall thou make to the ark, and in a cubit shall thou finish it above; and the door of the ark shall thou set in the side thereof; with lower, second, and third stories shall thou make it.*

Obviously the successes recorded by the Ark were no doubt attributable to the attention paid to the critical success factors of project delivery. More importantly these factors were collectively addressed by God and Noah; and it could be inferred that there was 'consensus ad idem'. It could also be inferred that the Ark was successfully delivered on time without any delay knowing that God had set the date for the first drop of rain that ultimately destroyed that civilisation. In terms of functionality there was no failure during the six months' voyage with no destination in mind. A thorough study of how the Ark was constructed and its successful floatation on the first ever voyage revealed a delicate

synergy between God and Noah at every stage of the first ever mega project by humanity.

Now let us turn our attention to cost which has been acclaimed by many researchers to be the most significant factor of project delivery; Jagboro (1988); Seeley (1996); Aje and Jagboro (2003); Ashworth (2012) and Smith (2014). Did the proponents of this ambitious city and tower project consider the cost implications of the various options and the ultimate cost of completing the entire project? Was there any contingency estimate for cost overrun and resolution of wage dispute by the work force? What of the time frame for the completion of the work before occupation? Any thought for sectional completion of the different phases of work and occupation of the city? Besides how was the city going to perform in terms of functionality? And if you have been following the global dialogue in recent times; it is quite obvious that the terms safety, sustainability, environmental impact assessment and climate change have made their entries into the list of critical success factors for project delivery. Therefore, anybody embarking on such a project must certainly consider and resolve these critical issues if he hopes to achieve a successful project delivery.

No doubt these critical success factors were not adequately evaluated until God entered the scene. Aje and Jagboro (2003) observed that "the nature of construction projects demand adequate planning, and entails determining social needs, carrying out feasibility appraisal, preparing designs and determining cost of the proposed developments. God's investigation showed that these people would not be better off if they were to continue with the work. So how was God going to convince them that their effort will ultimately be fruitless? He knew very well that their strength was in their common language that fostered the unity of purpose. He therefore concluded that the best way to stop this huge economic waste of resources, was for him to disrupt their ability to understand one another by confusing them. In the rumblings that ensued the construction of the Tower had to be abandoned.

4.0 The Nigerian Construction Economy

Mr. Vice Chancellor Sir, many of the socio-economic and to a large extent political problems confronting Nigeria over the years since independence have been well highlighted by Maghori (1987); Jagboro (1988); Jagboro (1992); Jagboro (2005); Jagboro and Owoeye (2003) and Oforeh (2005). These researchers all agree that these problems are "due largely to the overdependence on the oil sector as the main source of foreign exchange earnings and revenue"; thereby precipitating high rate of inflation, unemployment, low productivity in the non-oil sector accentuated by low capacity utilization, distortion in the pattern of domestic consumption and production, heavy external and internal debt burden among others. At the macro level, existing assumptions persist that structural changes will emerge in the construction industry of a particular country as the national economy develops over time. However, it has been observed that in the course of national development, substantial inputs of infrastructure and facilities needed for government administration and the manufacturing sector are within the purview of the construction industry. In this regard it is fundamentally important for both public and private clients who wish to invest in construction projects to seek for appropriate advice, particularly as it relates to the cost of development and other relevant contractual and legal matters affecting the procurement process.

It has been argued that for investment to occur in any economy there must be a propensity to save by both individuals and corporate entities. In this case, savings that are made by individuals or companies added to saving by government generate investment pool at home and abroad that can be devoted to development projects. Jagboro (1995) affirmed that this economic scenario can be represented by the following equation:
(Savings + Exports + Tax revenue) = (Investment + Imports + Government Spending).

By rearranging the above equation investment which is a major driver of the activities of the construction economy can be expressed as:

Investment = Savings + (Exports - Imports) + (Tax revenue - Government Spending).

Thus where there is a high proportion of savings in the national economy through a positive differential between exports and imports, and a positive differential between tax revenue and government spending it may be concluded that a favorable investment climate can be created for the expansion of the infrastructural base of the economy. Similarly, low level of saving could have a negative impact on the investment climate as well. While the first condition subsists in many developed countries, the second condition is very much in vogue in many developing countries including Nigeria. Where saving is low; there is leverage for government agencies to have recourse to financing of development using deficit budgeting through borrowing as shown below.

Investment = Savings + (Exports - Imports) + (Tax revenue - Government Spending) + (External borrowing + Domestic borrowing)

In Nigeria several factors have been advanced to explain the rising foreign and domestic debts profiles accentuated by huge budget deficits, low output growth, large government expenditure growth, high inflation rate and narrow revenue base (Onyeiwu, 2012). As at September 2011, Nigerian domestic debt profile stood at N5.3 trillion, an equivalent of $ 34.4 billion while the external debt was put at $6.50 billion bringing the total national debt to $40 billion or 19.60% of the GDP. However, while briefing the Members of the House of Representative Ad hoc Committee probing the non-implementation of the 2015 Budget; the Permanent Secretary, Ministry of Finance puts the nation's domestic and external debts as at June 2015 at N8.396 trillion and $8.31billion respectively (Nigerian Tribune, July 15th2015).

5.0 Where is the Quantity Surveyor?

> *For which of you, intending to build a tower, does not first of all sit down and count the cost, whether he has sufficient resources (including men, materials, machines and more importantly money) to finish it? Lest haply, after he hath laid the foundation, and is not able to finish it, all that behold it begin to mock him, saying, this man began to build, and was not able to finish (it).*
>
> (Luke 14: 28-30)

Mr. Vice Chancellor Sir, the quotation above by Jesus Christ speaks of no other personality but of the professional quantity surveyor whose function and relevance are very unique in the built environment worldwide. For emphasis the Great Rabbi was saying that a client, whether public or private stands to be ridiculed and mocked by passersby if his project is ultimately abandoned. Smith (2014) asserted that "the main professional disciplines providing specialist project cost and management services all over the world are referred to as cost engineers, quantity surveyors, construction economists and project managers." The use of the appropriate appellate is driven with reference to the United States and Canada, the United Kingdom and Continental Europe. As part of our colonial legacies, we inherited the term 'quantity surveyor' despite the fact that it has created for us a problem of true identity and the worth of our services in the construction industry.

The Nigeria Institute of Quantity Surveyors (NIQS) (2015) from an institutional perspective in its vision statement captured the profession of quantity surveying in Nigeria. It sees the profession to be responsible for total cost and procurement management, for the achievement of client's objectives in all types of capital projects and developments, from conception to commissioning and maintenance, in all sectors of the economy, for the attainment of sustainable national development and goals. Based on this institutional foundation the NIQS considers the quantity surveyor

as an "expert who is concerned with the financial probity in the conceptualization, planning and execution of both new development projects and refurbishment works". In this regards we can broadly construe the functions of the professional quantity surveyor to include but not limited to the pre-determination of the cost of proposed construction works, the cost planning process, tender documentation, negotiation and award, cost monitoring and cost evaluation to ultimate completion.

The functions of quantity surveyors as revealed by the above definition show that quantity surveyors provide services at the micro-economic spectrum of the construction industry that are synonymous with what the accountants and economists provide at the macro-economic end of the general economy. In fact, an integral aspect of the macro-economic analysis of the national economy must provide for the adequate input of quantity surveyors; as it relates to building works and other infrastructure as components of the national capital formation. Thus if the client is to have value for money, then the focus of attention must be on the pre-design and design stages of the project.

Regrettably many investors and financiers of infrastructure projects in Nigeria see cost advice as paramount only at the post-design stage in the development process of projects. Ogunsemi (2015) lamented a situation where most times, working drawings are handed over to the quantity surveyors without participating in the design process. The neglect of the words of wisdom by Jesus Christ has been identified as a significant reason for poor performance of many infrastructure investments in Nigeria. The function of the quantity surveyors is centered on his ability to master the science of forecasting of future construction activities. According to Jagboro (1998) the procurement, processing and utilization of construction cost data is at the heart of their day to day activities of forecasting what the client is expected to pay for the project. In the discharge of the quantity surveyor's functions; a number of quantitative forecasting methods have evolved over the last two hundred years. Although no technique has resulted in a

totally accurate forecast, these methods have provided reliable guidelines for clients to make reasonable decisions.

Despite the unique empowerment of the forecasting phase to the quantity surveyor in the evolution of the project development and construction process, it is nevertheless bedeviled with uncertainties that are both internal and external to the construction industry. Jagboro (1988) observed lack of up to date information on price movements of construction resources as a set back to the realization of accurate cost estimates. In addition, within the framework of existing globalized business environment, clients have tended to seek for more products mix information on which to base their choices. There is also the issue of demand and greater product diversity made possible through rapid technological advances. This makes forecasting and the ultimate choice of products and product mixes more difficult and exacting. Smith (2014) opined that "The global construction industry is littered with many examples of high profile projects that have significant time and cost overruns and this is merely a reflection of similar problems at all project levels."

The Nigerian construction industry has not been spared the vagaries of cost and time over runs for reasons that are quite obvious. While the rate of cost escalation of most building resources in Nigeria was moderate within the sixties and seventies, the early eighties marked a dramatic upsurge of the cost of construction resources. Jagboro (1988) and Jagboro (1996) established that the unit cost of a bag of cement rose by 40% between 1978 and 1980; 330%between 1980 and 1984 but between 1984 and 1986 it was 350% owing to the Structural Adjustment Programme (SAP). This astronomical rise was as a result of the massive depreciation of the naira. The national currency that exchanged at about N1.00 to $2.00 in 1986 is currently being exchanged at the parallel market rate of N385 to the US$ 1.00, partly due to the high volatilities associated with the global oil market in recent years. In the present economic world climate, Ashworth and Hogg (2009) strongly believed that "the

future for quantity surveying is excellent with their skills being in high demand amongst a diverse range of clients and for a wide range of activities... What is clear is that the role and activities of quantity surveyors have now become extremely diversified, with a range of employers to match".

6.0 Preponderance of Abandoned Construction Projects

Mr. Vice Chancellor Sir, according to Jagboro and Ojo (2003) the construction industry is the sector of the nation's economy responsible for the development and transformation of the physical environment. Seemly in pursuit of these goals humanity over millennia have been involved in one form of extra ordinary construction work. Otim, etal (2014) listed the "pyramids of Egypt, the Great Wall of China, and the Angkor Temples of Cambodia as some exhibits of the great wonders of the world created by man." The same can also be said of the Cocoa House in Ibadan and the Independence Building in Lagos as they were land mark achievements by the construction sector in Nigeria. However, President Shehu Shagari after coming to office in 1979 embarked on the construction of the Ajaokuta steel complex by a conglomeration of Russian firms; done ostensibly to the exclusion of well qualified construction firms from Western Europe and the Americas.

Hopefully the President then envisaged that with the completion of that mega project Nigeria was ready to leap into the group of emerging economies of the world. Heralded by many experts to launch Nigeria into our own home grown technological revolution, it is sad to observe that after more than three decades Ajaokuta Steel Complex has become the equivalent of the biblical Tower of Babel. Today we are all witnessing our own dear native land existing only as a consumer nation importing every trash rolled from the industrial mills of Western Europe and of late the Asian tiger nations. It is now estimated that Nigeria spends 500Billion Naira annually importing steel to sustain the avarice of our construction industry.

Following the footstep of Ajaokuta the nation witnessed a mosaic of junk yard of abandoned building and infrastructural projects beginning with the decade of the eighties. This is very much so as according to Jagboro and Ojo (2003) abandoned building and other infrastructural construction projects are a common sight in many cities in Nigeria with their destructive effect on our economic growth. No area was this problem so acute than in sectors such as transportation, power, health and education that had the immense potential of impacting our national productivity. The University of Ife now Obafemi Awolowo University was never spared of this national scourge of abandoned projects. Photos 2,3 and 4 are typical illustrations of some abandoned projects.

Photo 2: Abandoned College of Medical Sciences Building Project. University of Benin

Source: Committee on Needs Assessment of Nigerian Public Universities. Thursday, 1st, November, 2012

Photo 3: Abandoned Building Project, University of Nigeria, Nsukka

Source: Committee on Needs Assessment of Nigerian Public Universities. Thursday, 1st, November, 2012

Photo 4: Abandoned Library Complex Building Project, Niger Delta University, Yenegoa.

Source: Committee on Needs Assessment of Nigerian Public Universities. Thursday, 1st, November, 2012

7.0 Causes and Effects of Abandoned Projects

Ashworth and Hogg (2009) opined that "many of the problems that exist in construction are attributable to the barriers that exist between clients and contractors. This was quite obvious in the case of the Tower of Babel. Harris and McCaffer (2002) contended that project failures due to time and cost overruns result from a number of factors including poor field investigation, under estimates, lack of experience, inadequate project analysis and poor investment decisions. Chitkara (2005) while taking the theme of project abandonment further argued that poor planning for implementation entails inadequacies in time plan, resource plan, equipment plan, coordination, organization, cost planning and improper pre/post contract actions. He concluded that poor communication can also turn a corporate strategy into a modern day Tower of Babel. Babatunde, Babalola, Jagboro and Opawole (2012) asserted that variation in the terms of building contracts often produce division and conflicts between client, consultants and contractors; which if not checked could generate grave consequences of ultimate abandonment among others. Such a scenario could have arisen in the case of the Tower of Babel with no evidence of well formulated design plans.

Mr. Vice Chancellor Sir, projects in the categories of Public Roads, Power Stations, Dams, and Petrochemical Plants for obvious reasons tend to be consigned to suffer heavily from cost escalation, time overrun and ultimate abandonment if not remedied by any existing intervention mechanisms. A global survey by Flyvbjerg et al. (2003) of the construction sector; spanning twenty countries and five continents found that substantial cost escalation of construction and infrastructure projects is the rule rather than the exception. In an earlier study Flyvbjerb (2002) was able to establish that 90% of construction projects had under-estimated costs and cost overruns of 50-100%. Flyvbjerb (2005) provided a litany of global examples of major project cost overruns; including the Boston's Central Artery/ Tunnel Project with 275% over budget to the magnitude of US$11 billion; the Channel Tunnel

between the United Kingdom and France with over 80% over budget for construction and 140% overrun for financing. The Pentagon spy satellite program had a $4 billion cost overrun and finally the International Space Station (ISS) had a $5 billion cost overrun. Kenny (2010) based on a study for the World Bank argued that the issue of cost escalation was a major global problem with construction being a US$1.7 trillion industry worldwide with a significant proportion involving publicly financed projects. He cited the example of India where approximately half of all road projects had cost overruns greater than 25% and time blowouts exceeding 50%.

Now let us come to the home front and examine one or two cases so that we can all appreciate the scourge of abandoned projects and the enormity of its burden on the nation's economy. In my earlier submission I have alluded to the fact that the Obafemi Awolowo University had its fair share of abandoned projects in Nigeria. It is on record that the construction of the Faculty of Environmental Design and Management Building Complex was started in 1982 but was abandoned in 1984. Nothing was heard about this project until 2012. Under a rescue mission to salvage a fraction of the complex it is instructive to note that over N615,000,000.00 has been spent for a project with initial contract sum that was less than N2,000,000.00. Regrettably even that fraction of the entire project is yet to attain full occupation. While this predicament drags on the Faculty continues to suffer from acute shortage of adequate lecture theatres, classrooms, academic staff offices, demonstration studios, laboratories and workshops that are basic and essential requirements to create conducive teaching and learning environment for both staff and students at all levels.

The First Year Mathematics Building in the Faculty of Science also fell into the same category of abandonment in 1982. Broken down into three phases A, B and C for ease of completion in 1990; phase A was completed in 1992. Phase B was awarded in 2004 and completed in 2006 at a cost of about N130,000,000.00. Furthermore, the Phase C was awarded in 2010 and now at the

finishing stage with over N220,000,000.00already spent on it. Institutional support buildings were also cut in the cross fire of project abandonment. The University Hall Extension project was abandoned in 1984; though the contractor had promised its completion if the sum of N7,000,000.00 could be guaranteed. Effort to complete the project by the University Authority began in earnest in 2006 with two phased intervention programs. Interestingly phase I was awarded in 2006 and completed in 2008 at a cost of N148,000,000.00. Phase II was awarded in 2008 and completed in 2010 at a cost of N150,000,000.00. For those who are conversant with the University Hall Extension there is a feeling in me that the project deserves the phase III to make it truly completed and achieve optimal functionality.

Mr. Vice Chancellor Sir, apart from the obvious effect of cost burden in completing abandoned projects; we are also conversant with the non-monetary side effects. Borrowing a leaf from the educational sector in Nigeria, university authorities are constantly saddled with problems of crowded classrooms and lecture theatres; poorly equipped laboratories and demonstration studios. Photo 6 shows students attending regular academic lecture in a sports pavilion at the Micheal Opara University of Agriculture, Umudike. Similarly, Photo 7 shows students attending regular academic lecture in a crowded environment at the Delta State University Abraka.

Photo 6: Students attending regular academic lecture in a sports pavilion at Micheal Opara University of Agriculture, Umudike.

Source: Committee on Needs Assessment of Nigerian Public Universities. Thursday, 1st, November, 2012

Photo 7: Students attending regular academic lecture in a crowded environment at the Delta State University Abraka.

Source: Committee on Needs Assessment of Nigerian Public Universities. Thursday, 1st, November, 2012

Mr. Vice Chancellor Sir, while researchers have identified numerous factors as being responsible for project abandonment worldwide; the Nigerian construction industry exhibits some peculiar attributes that appear to be very unique to our political and economic climates. These attributes include but are not limited to the following:

i) Short fall in Projected Funding Facilities

Olufidipe (2003) opined that project implementation in Nigeria has always been slow, exemplified by huge budget deficits and poor physical performance. In this regards Opawole, Jagboro and Babatunde (2011) asserted that significant number of projects contained in the annual budgets of governments at all levels in Nigeria are either partly implemented or not implemented at all in the fiscal year; thus resulting in wide disparity between the actual and projected budget figure. Repeated failures in adhering to implementation strategies as laid out in the projected revenue and expenditure budgets has brought the nation to its present economic

dilemma. Furthermore, we have been unmindful of the negative signals from the global market on the trends of the movement of oil prices within and outside the OPEC cartel.

ii) Deficiency in the Contract Award Mechanism

Wahab (2000) identified various kinds of manipulation of the procedure for the award and execution of public contracts in the forms of inflation of contract costs. These include the use of the contract system to divert public funds to private pockets, the award of contracts for non-existent projects, the use of inexperienced contractors and over-invoicing; influence peddling, the award of contracts to friends, and family members, and the award of contracts without adequate planning and budgetary provisions. As a way of addressing this menace, the Public Procurement Act 2007 was signed into law on the 4th of June, 2007 as fall out of the Budget Monitoring and Price Intelligence Unit under the Presidency. Five years later Shwarka and Anigbogu (2012) evaluated the impact of the Procurement Reforms on the delivery of public buildings before and after the establishment of the reform. The results showed no significant difference in the mode of project delivery before and after the introduction of the much publicized reforms in Nigeria.

It is obvious that Public procurement reforms have not been effective in mitigating the twin contractual problems of cost and time escalations in Nigeria. To buttress this assertion; the Guardian Newspaper of Tuesday 6th October, 2015 while reporting on the 'Ondo State Shoreline Project' had this to say "The resident of Aiyetoro and other coastal communities have been raising hues and cries over the same contract awarded twice by the Niger Delta Development Commission (NDDC) to Gallet Nigeria Limited in 2004 and Dredging Atlantic in 2009". For the record, NDDC first awarded the contract to Gallet Nigeria Limited in 2004 and paid N650 million mobilization fees with 18 months' completion deadline; but was terminated after four years of non-performance. The same project was later re-awarded to Dredging Atlantic for

N6.50 billion with the payment of N2.5 billion as mobilization fees in 2009; and the people in the community said they have never seen the Contractor for the past six years." If what the community said was right and I have every reason to believe them; we can conclude that this 'competent contractor' under the regime of the Procurement Act 2007 just collected N2.5 billion of the tax payers' money and disappeared into the deep Atlantic Ocean.

iii) Non adherence to competition and ethical requirements

In the "Forward" to the book Competitive Engineering by Gilb (2005), Erik Simmons of Intel Corporation wrote that "Competition is the strongest force shaping today's product development landscape. In addition, companies large and small face ever increasing product complexity, pressure to reduce time to market and increase productivity, and unprecedented challenges from globalization". It is in this desire for competition that the 'due process' requirements are lacking in implementation. Adeyinka, Jagboro and Ojo (2014) asserted that "there have been several criticisms about construction professionals' adherence to ethical standards". On a number of projects investigated integrity of professionals have been questioned with many empirical studies that emphasized practices such as illegal agreements between tenderers resulting in seemingly competitive bids, price fixing, or market distribution schemes that circumvent the spirit of free competition and ultimately leading to the defraud of clients. Other unethical practices of professionals included bid-cutting, bid-shopping, cover pricing, hidden fees and commissions.

iv) Political interference and corruption

> *Discipline is adherence to rules formed by society for the good of all*

The Greek philosopher, Aristotle, a revered intellectual of the ancient world, penned the words of the quote above many centuries ago. But Mr. Ayo Olukotun, writing in the 'PUNCH' of

18th September, 2015; says "his countrymen currently in the throes of economic tragedy have obviously not taken heed to his several writings on discipline and its centrality to governance. The same can be said of the Nigerian nation in the theater of discipline and corruption. Lack of political will by government has been a major hindrance in the provision of infrastructure in Nigeria and this has permeated all spheres of governance. Corruption has been the bane of the Nigerian economy for decades and yet we pay lip service to this cancerous disease. Our dailies are replete with comments and debates on the issue of corruption. But I choose to take it from the angle of Dapo Fafowora writing in 'The Nation' of Thursday October 8, 2015 which was actually first published in March, 2014:

> *There is growing and justified local and international concern about public corruption in Nigeria. But how deep is corruption in the country? Most Nigerians, including public officials, who are at the center of corruption in the country, know it is pervasive and that, to a large extent, it is directly responsible for poor service delivery and mass poverty in Nigeria. Public corruption polarizes the state and constrains economic growth. But President Jonathan pretends it is not all that bad. While addressing the Nigerian community recently in faraway Namibia, he said media reports about corruption in Nigeria were exaggerated and that his government is tackling it.*

In our effort to address this menace of corruption many programs have been launched starting from the military era to date. There was the War Against Indiscipline (WAI) by General Muhammadu Buhari; the Mass Mobilization for Social and Economic Recovery (MAMSER) by General Ibrahim Babangida, and the War Against Indiscipline and Corruption (WAIC) by General Sanni Abacha. At the enforcement component in this war against corruption the ICPC and the EFCC were established by President Olusegun Obasanjo to complement the waning efforts of the Nigerian Police

to tackle the rising wave of crime in the society. However, statistics emanating from governance particularly from 1999 to 2015 tend to make me believe that we could eventually establish a positive correlation between the increased number of programs and institutional reforms and the increase in the scope and magnitude of corruption in the country. In fact, Jagboro (2005) established an inverse relationship between the value of our foreign debt and the level of investment in infrastructure, seemingly to suggest that borrowed funds were possibly diverted to unapproved outlets.

8.0 Contribution to Knowledge

Mr. Vice Chancellor, Distinguished Ladies and Gentlemen, on occasion such as this, it behooves me to state briefly my humble contribution to this discipline of quantity surveying through my research works. I have categorized them into; framework for cost modeling and tender evaluation; high cost and utilization of local building materials; management of time in the construction process, acquisition of management and professional skills and diversification of professional services.

8.1 Framework for Cost Modeling and Tender Evaluation

Cost estimation is essentially an intuitive process, which attempts to predict the final outcome of a future capital expenditure programme even though not all parameters and conditions concerning a project are known or fully defined when the estimate is prepared. My experiment with cost data has enabled me to see that they tend to exhibit some statistical characteristics associated generally with the dissemination of information (Jagboro, 1998). Jagboro (1989) explored the concept of adopting a framework of cost modeling within the emerging information technology and computer facilities that could handle complex computational problems. The adoption of artifacts as recommended by the author would go a long way in eliminating the problems of continuous price fluctuation thereby achieving higher prediction efficiency of cost estimates. This has enhanced the provision of stable price and

tender sums in the award of construction projects. Jagboro and Ogunsemi (1997) examined the relationship among tenders' values and the quantity surveyor's estimate, and in the quest to forecast the behaviour of contractors' tender bids. The findings showed that most contractors' tender sums in Nigeria converged within a predetermined percentage range of the quantity surveyor's estimate. This is very useful as it be could be a baseline for screening contractor's tender and making appropriate recommendation for the successful tenderer.

Ogunsemi and Jagboro (1998) evaluated preliminary estimating methods in use by quantity surveyors in Nigeria with a view to identifying the methods that correlated significantly with tender sums quoted by contractors. The result showed that preliminary estimates prepared by quantity surveyors were not significantly different from tender sums quoted by bidding contractors. Such finding provides a firm basis for the use of the quantity surveyor's estimate as an effective tool for vetting the submissions of contractors during the tendering process and in the financial management of construction projects. Ultimately such knowledge would be of immense benefit to the construction economy in Nigeria through reduced divergence in tender bids of contractors.

8.2 High Costs and Utilization of local Building Materials

A major problem in the Nigerian construction economy is the over dependence on imports resources, particularly building materials. Jagboro (1988) posited the adverse effect the Structural Adjustment Programme (SAP) with its cardinal focus on the Second Tier foreign exchange market (SFEM) on the utilization of local building materials. Jagboro (1992) also investigated the choice and utilization of local building materials and the role of architects, engineers, and quantity surveyors in the quest to reduce overdependence on the importation of construction resources. The findings identified the significant contribution of construction professionals through policy initiative; and their influence in research and promotion of the use of local building materials.

Bearing in mind the proportion of building materials in the overall cost of construction, such actions could enhance the creation of a sustainable design and construction environment in Nigeria.

Jagboro and Owoeye (2003) tested a predictive model correlating the prices of core building materials such as cement, reinforcement etc. and the exchange rate of the dollar to the naira. The result showed a very high significant linear correlation between the log of prices of building materials and the exchange rate of the dollar. Such empirical finding could provide construction economists with a framework for deriving tender figures of construction works bearing in mind the fluctuating rate of the naira. It would also be very useful in resolving disputes arising from fluctuations claims during execution of the work. Jagboro (1998) also examined the effect of payment for the advance purchase of materials on contractor's cash-flow using the Net Present Value Method (NPVM). The result showed an increase of 2.67% and 9.75% Advance Payment Schedule (APS) when compared with the expected monthly and bi-monthly valuations respectively. The study concluded that the execution of construction work through advance payment was more beneficial to both clients and contractors; if divorced from political interference that often lead to project abandoned owing to inadequate financial arrangement.
Generally, fluctuation claim is a highly sensitive and emotional aspect of construction administration in Nigeria. Existing contractual provisions in the settlement of fluctuation claims have been found to be too cumbersome and less proactive. Besides it is very much untimely, of little assistance to contractor's cash-flow arrangements and does not in certain cases accommodate the interest of the client. Jagboro (1996) addressed these short comings by proposing an empirical formula that could be used to establish a fairly and equitable value of fluctuation claims that is mutually beneficial to both contractors and clients alike; thus ensuring confidence in the contract process. More importantly it is very much related to the actual progress of the work on site.

8.3 Management of Time in the Construction Process

A major criticism facing the Nigerian construction industry is the growing rate of delays in project delivery. Delay is a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the original or the stipulated or agreed contract period. Jagboro (1999) evaluated the factors that give rise to delay in the execution of construction projects in Nigeria. Poor supervision, improper planning during design and non-honouring of payment certificates were identified as highly significant. Aibinu and Jagboro (2002) studied the effects of construction delays on construction project delivery in Nigerian construction industry. Six effects of delays were identified by the authors namely; time overrun, cost overrun, dispute, arbitration, total abandonment and litigation. The results also showed that loss and expense claim arising from delays had significant effect on cost overrun of building projects, with the coefficient of determination found to be 0.64. The same can be said of fluctuation claims with coefficient of determination of 0.80. These findings have provided practitioners with empirical information that are relevant in the resolution of the problems associated with delay in the execution of construction projects.

Claims for fluctuation, variation; and loss and expense accounts are usually quantified in monetary values. The computation of the monetary values often lead to disputes between the contractor and the employer. One sensitive area is the monetary value of extension of time, predicated on the perception by consultants as time adjustment compensation. On the other hand, contractors see it in terms of time adjustment and monetary compensations. Jagboro and Alli (1999) explored the argument of contractors that monetary value of contractual claims (CCMV) correlated with the approved extension of contract period (TET). The result showed the coefficient of determination to be highly insignificant with R_1^2 = - 0.0070; (F--5% = 0.59). This finding has reinforced the approach adopted by quantity surveyors in the resolution of

disputes emanating from extension of time granted to the contractor by architects.

Variations and delay during construction on site occur for a number of reasons including finance, design, aesthetic, geotechnical, geological, weather conditions and feasibility of construction. Aibinu and Jagboro (2002); Aje and Jagboro (2002); and Jagboro and Aje (2003) examined the endemic problems of variation and delay of construction projects with their attendant consequences in Nigeria. The authors using regression models empirically established the effects of variations and delay; in terms of time and cost overrun. With such a formula, it would be possible to appraise the impact of variations and delay on the contract sum and contract period. Babatunde *et al.* (2013) also evaluated the factors predisposing building elements to variation in Nigeria. Such findings could provide guidelines for the inclusion of contingencies and acceleration of site activities thereby giving rise to improved project management procedure.

8.4 Acquisition of Professional and Management Competence

Many construction projects have failed to attain practical completion in Nigeria owing to enormous pressures on cost limit and the desire for value optimization of client's financial investment. To achieve this goal there is need for greater management input by professionals in the built environment. Jagboro (2000) evaluated the management competencies of professional quantity surveyors through self and co professional rating. The study established an empirical model for assessing their management input required for successful project delivery as shown by the following equation:

Management Input (Y) = 1.92 + 0.27 Management Ability+ 0.31 Technical/Technology know how - 0.14Understanding of Financial Matters - .01 Social and Cultural Issues + 0.54 Legal and Contractual knowledge – 0.23 Business Understanding

The coefficient of determination, $R^2 = 0.69749$ and $R^2 = 0.58781$ were computed for the self and the co-professional rankings respectively.

An examination of the model showed that Management Input was positively correlated with the Acquired Legal and Contractual knowledge (0.50), Technical/Technology (0.31) and Management Ability (0.27). The model could also be used as a benchmark for evaluating the curricula of training institutions including universities and polytechnics in Nigeria. In a construction scenario where the environment is becoming more complex, there is need for greater management leadership qualities within the ambit of construction professionals suited for project management services. Using a competency framework is not only a strategic way to focus talent, but such a framework can also build a strong corporate culture. Drawing from the theoretical framework for competencies in relation to the legal profession proposed by Bock and Ruyak (2007), Dada and Jagboro (2010) developed a task competencies level framework for quantity surveyors operating on four potential variables of education and training, core skill, recruiting and professional development using the Delphi technique. Such a frame work could greatly assist the efforts of professional associations' competency examinations and continued professional development (CPD).

8.5 Diversification of Professional Services

Financing of infrastructure in Nigeria, like in most developing countries, has traditionally been a public responsibility through fiscal budget allocation. However, Opawole, Jagboro and Babatunde (2011); Opawole and Jagboro (2011) and Frank (2003) all identified the major causes of poor performance of infrastructure in urban centers in Nigeria as factors relating to high cost of infrastructure provision, failure of government to adopt liberalization policies in dealing with urban infrastructure matters and inadequate budgeting by public sector. Oforeh (2006) attributed the low level of infrastructure projects in Nigeria as

resulting from low level input of construction professionals in policy formulation at the macro-economic level. With Osun State as a case study, Opawole, Jagboro and Babatunde (2011) determined the level of implementation of health, education, housing infrastructure, transportation, rural/urban electrification and water infrastructure projects to be 54.51%, 53.69%, 36.69%, 45.33%, 46.44% and 49.36% respectively. The study also established the relationship between mean budgetary allocations (X) and the level of implementation in percentage (Y) to be:

$Y_{Tm} = 1026.43X - 71175$; $Y_{Em} = 4318.27X - 85682$;
$Y_{R/Um} = 95.51X - 84889$; $Y_{Wm} = 354.30X - 41172$;
$Y_{Hm} = 558.45X - 21869$; $Y_{HSm} = 260.43X - 44423$;
for transportation, education, rural/urban electrification, water, health and housing respectively.

While these findings were based on the statistics from Osun State Nigeria; they are more likely to mirror the performances of many States of the Federation. As if to validate that assertion the briefing of Permanent Secretary Ministry of Finance to the Ad-hoc Committee of House of Representative showed a performance of 34.89 % of the 2015 Federal Government Budget as at 15th September, 2015.

The Stock Exchange Market plays an important role as a source of cheap fund in the financing of development projects worldwide. Jagboro and Atigogo (2000) examined the effects of the devaluation of the naira on the share prices of quoted construction companies, using monthly average of share prices and the corresponding exchange rate of the naira to a dollar. The results showed positive and significant relationship between the share prices of selected companies and the foreign exchange rates of the dollar with adjusted $R^2$0.6349 to 0.7518. Such finding is of high economic value to the promotion of investment within the construction industry in Nigeria. In an industry, often bedeviled by illiquidity, the Nigerian Stock Exchange could readily become a

haven for cheap fund to finance building and other infrastructural projects in Nigeria.

The issue of external debt has generated much controversy and debates within the last two decades in the country. Jagboro (2005) investigated the relationships between the nation's debts burden and infrastructure development. Using the budgeted capital expenditure as proxy for the level of infrastructural development, the result showed that capital expenditure was positively correlated with domestic debt, with an adjusted R^2 value of 0.831. This was certainly a welcome development since investment in capital projects were expected to be financed from borrowings. On the other hand, capital expenditure was negatively correlated with external debt with adjusted R^2 value of 0.867. These relationships are illustrated by the equation (i)

Capital Expenditure = -3847.25 + 0.76 Domestic Debt - 0.12 External Debt.....(i)

The implication of this finding was that the more external debt we had, the less of capital expenditure. Thus this work had empirically established that infrastructural development in the country was being sustained by the domestic borrowing of government, obviously exposing the adverse impact of external debt on the nation's quest for economic development. If external borrowing has no positive impact on infrastructure, then we should ask ourselves what happens to the huge foreign loans that are procured by government annually. The author recommended the need for the African Union and the International Communities to urgently address the problem of Africa's external debt burden if the Continent is to witness any meaningful economic development and improve the living standards of the citizens.

Of recent Public Private Partnership popularly called PPP has been emerging as an alternative public procurement model. According to Opawole, Jagboro, Babalola and Babatunde (2012) the desire by government to embrace PPP models has been occasioned by the precarious public budgeting system that does not guarantee the

successful completion of on-going projects. This paucity of funding of infrastructure in Nigeria was also addressed by Nwankwo (2011) and Ogunsemi (2015). The adoption of PPP has resulted from the insufficiency of funds and the increasing demand for public facilities and services. Despite its nascent deployment in the Nigerian construction economy attempts have been made to establish modalities for its successful implementation. Jagboro, Sani, Ojo and Opawole (2014) evaluated this procurement model using data from the Mohammed Murtala International Airport 2, Lagos - Ibadan Express Road, and the Lekki – Epe express Road.

Opawole and Jagboro (2016) while attempting to benchmark parties' obligations identified 47 contractual obligations in the specific context of developing countries. Based on "half adjusting principle", thirteen (13) of the obligations notably cost of land acquisition and cost of social disturbances among others were allocated to the public sector. Eighteen (18) of the obligations including project design and cost of feasibility study were allocated to the private sector and lastly sixteen (16) of the obligations including preparation of terms of the contract and relocation of third party facilities were shared by the parties. Such finding could substantially eliminate the problems currently militating against the successful implementation of Public Private Partnership projects in Nigeria.

9.0 Service to the Community and Nation

Mr. Vice Chancellor Sir, I took over the Headship of the Department of Quantity Surveying as a young Lecturer I in 1990; with two Graduate Assistants who later migrated to Europe in search of greener pastures. This precarious situation made me to embark on a program called "Operation Catch Them Young" to lure some of the best graduating students of the Department back to the classroom. This scheme was so successful that it eventually became a model for other Universities in the country. This significantly improved the academic staff profile of the B. Sc. Programme. Despite this modest achievement in the decade of the

nineties the discipline of quantity surveying was still being considered by many as endangered species. The need for high level manpower training for the Quantity Surveying profession in Nigeria prompted me to commence the M.Sc. Programme in Quantity Surveying in the Department.

It is on record that outside the United Kingdom, the Obafemi Awolowo University, Ile-Ife was the first to commence such a Programme in Nigeria graduating two students under my supervision in 1997. In my service to the Obafemi Awolowo University, I have been privileged to be associated with so many young men and women in the discipline of Quantity Surveying, but today there is a class of the first ever. I was instrumental in graduating the first ever PhD graduate in Quantity Surveying in any Nigerian University in 2002. There is also the first ever undergraduate student I supervised to have attained the status of a professor. Today My Department is proud to have produced the first ever woman professor (of Quantity Surveying) in Africa.

10.0 Recommendations

If the Nigerian construction industry is to be relevant in propelling the national economy, then it is important that stakeholders must address the fundamentals for successful project delivery. Over the years my research drive has enabled me to identify certain areas of the construction industry in dire need of attention. Emanating from these studies that have spanned over three decades of research, I am proposing the following recommendations in charting better modus operandi for the Nigerian construction industry and by inference the Nigerian economy.

i) Engagement of Consultants

Engagement of design professionals, particularly registered quantity surveying firms with demonstrably competence, at a very early stage of the development process so as to allow them consider how the components they design might be delivered to

site. It will also afford them the opportunity to assess when these components will be needed and how they will be handled on site. This sort of preplanning can lead to a substantial reduction in unnecessary transport costs, time wasting and costly damages on site.

ii) Prequalification for Tender Process

There is need for the Bureau of Public Procurement to be overhauled and strengthened through enforceable legal framework and the creation of enabling and transparent environment with clearly defined specialized professional intermediation. This will remove the seemly pervasive mistrust in the sales of public assets and; engender both national and international confidence in the sales of national assets.

iii) National Cost Data Bank

The British Construction Industry which is often referred to as the model for the Nigerian Construction Industry; has at her service the British Cost Information Service, BCIS. The BCIS has been in existence for more than a hundred years delivering quality service to the UK construction economy. There is an urgent need for the creation of a specialized National Cost Data Bank to be domiciled and managed by the Quantity Surveyors Registration Board of Nigeria (QSRBN). The QSRBN by her mandate could make it mandatory for all practicing quantity surveying firms to subscribe and periodically make returns on completed and on-going construction projects that are being executed by them.

iv) Enforcement of Penalty Obligation Conditions

Going by the level of corruption in the construction segment of the nation's economy it is quite obvious that the level of compliance with ethical standards is very low. Enforcement Agencies should be empowered through the strengthening of the legal instruments by both the Executive and Legislative arms of government. The

Department of Quantity Surveying, Obafemi Awolowo University, Ile-Ife is more than prepared to partner with relevant Professional and Regulatory Agencies within the built environment in the country to see to the realization of this key goal of nation building.

v) Creation of Research and Development Initiative for the Construction Industry

The Quantity Surveyors Registration Board of Nigeria, (QSRBN) and the Nigerian Institute of Quantity Surveyors, (NIQS) are being urged to sustain the momentum that has been provided with the policy document on research through the creation of enabling environment for the actualization of this initiative. We have the human capacity to undertake these tasks; and all that we require is for the industry to support us with the funding and creation of an enabling environment,

vi) Alternative funding arrangement for our infrastructure

It has become obvious that public sector budgetary allocations can no longer sustain the level of infrastructure development of the Nigerian economy. In this regards, deliberate effort should be made by government at all levels to embrace the window of opportunities at their disposal through the PPP. The Infrastructure Concessional and Regulatory Commission (ICRC) should be restructured and empowered for a more proactive initiative and intervention strategies in the procurement of infrastructure. Clear demarcation of obligations based on research findings should be the basis for the two parties to enter into such agreements.

11.0 Acknowledgement

Mr. Vice Chancellor Sir, it is very much expedient for me to recognize in this lecture those individuals who have made positive contributions to the success of my academic pilgrimage. First, I want to register my sincere gratitude to the Almighty God for keeping me alive to witness this historic moment. God has always

remained my sustainer in my sojourn in this ivory tower. I want to place on record the efforts of the shaping hands of my late father Mr. Andrew Mabino Jagboro and my late mother Madam Janet Bramese Jagboro. I wish to single out the effort of the former Vice Chancellor, Professor Wande Abimbola in my quest to be employed as a young academic staff in the Department of Quantity Surveying. His firmness of purpose is hereby acknowledged. I also acknowledge the support I received from two other former Vice Chancellors; Professors Wale Omole, who admired my contribution to the profession of quantity surveying in Nigeria and Caleb Osuntogun for his respect for academic leadership. I am highly grateful to the current Vice Chancellor, Professor Tale Omole who deemed it fit for me to attain the highest academic status in this university, and all other Principal Officers of the Obafemi Awolowo University. I thank the former Dean of the Faculty of E.D.M; Professor S. O. Fadare and the current Dean of the Faculty of E.D.M.; Professor B. T. Aluko for their support.

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Mr. Vice Chancellor Sir, Distinguished Guests, Ladies and Gentlemen thank you all.

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