Construction Project Management In Nigeria: Challenges and the Way Forward

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Abstract

This study addressed issues bothering on incessant construction project stoppages or abandonment in Nigeria, with a view to identifying the critical causal variables. Data were sourced from 20 out of 31 reputable construction firms with operational/regional administrative offices in Port Harcourt, the Rivers State capital. These local limited liability companies completed and returned the questionnaire administered on them, in good time. After applying Chi-square (X^2) and Kendall coefficient of concordance statistical techniques, it was established that the ranking of the critical factors that hamper contract job completion was significantly different, thus underscoring their respective materiality. The recommendations therefore emphasized expatriate-indigenous companies' partnering, sustainable funding, conscientious comprehensive local industrial capacity building, and total impression management.

Introduction

Serious concern has been expressed about public projects that have been abandoned in various parts of the country, after huge financial mobilizations. Most of the projects are in the construction industry and sometimes funded by foreign agencies. Various factors have been adduced for this unhealthy scenario, the most notable being poor project analysis and management. Another problem facing the sector include phenomenal increase in prices of the inputs occasioned by dearth of building material locally, and difficulties in importation of foreign alternatives. The construction industry also has very low absorptive capacity added to shortage of well trained indigenous manpower required to plan, manage, and to execute contracts awarded to them. As the firms resort to improvise, they experience frequent incidences of wastage and pilfering. Reports have it that while, on the average, wastefulness, pilfering and other factors accounted for about 2.5% of 15% in Nigeria. Worse still, the sector has not been accorded meaningful research and development (R&D) attention, despite the crucial place it occupies in the economy. It is in this light that this current adventure was considered very timely and appropriate.

The following research questions were addressed in the study:

i. What are the major factors responsible for intermittent stoppages and eventual non-completion of projects on target-time?
ii. To what extent are such disappointments related to poor management/implementation of projects?
iii. What improvements in the project management processes are required to enhance construction performance?

The comprehensive research hypothesis (RH) formulated for this study was:

RHo: There is no significant difference in the ranking of the critical factors, which hamper contract job completion of target-time.

Literature Review

In most construction projects, three major parties are usually involved. These are the client (promoter) the designer (consultant) and the implementer (contractor).

The client expresses a desire to have an infrastructure constructed for him, such a building, bridge, road, hydroelectric project, etc. The expression of this desire implies readiness to fund the project to completion. Barron (1976), thus, contend that the client should realize that there is an element of risk in the contract which he must bear and ample allowance has to be made in the budget to accommodate such contingencies, particularly in civil works. Furthermore, the client needs an expert to package his dreams into a readable, interpretable, reproducible, and constructible form (Owuala, 2001). This is where the project designer is required.

Slack and Giles (1981) maintained that consulting experience engineers had become very illustrious in engineering history by virtue of their role as coordinators all of specialist design elements making up the project. The consultation in order to do a good job, interview the client to properly define what is actually desired. Based on the outcome, the consultant starts the preliminary design, visits the site to examine the topography, soil conditions, and other physical constraints like accessibility, existing infrastructure, labor mobility and requirements of the planning authorities in the location. With these inputs, the consultant then produces the preliminary design and submit them for the client to vet and satisfied with such dimensions as functionality, aesthetics, safety, and cost.

Subsequently, tenders are invited and a competent contractor is then selected to concretize the project. The consultant usually defines the scope of work and the technical specifications for measuring progress and quality of work.

Good workmanship and right quality of materials are usually checked by some testing procedures, and it is the duty of the consultant to ensure compliance by the contractor. He assesses or confirms the measurement of the job for purposes of raising interim payment certificates. Any negligence in this measurement could lead to over payment to the contractor. He assesses or confirms the measurement of the job for purposes of raising interim payment certificates. Any negligence in this measurement could lead to over payment to the contractor. He could also certify extra jobs arising from genuine changes and checks possible abuses of this privilege. It is also the consultant's duty to enforce any penalties arising from the contractor's lapses in terms of poor workmanship, fake materials, delays and others.

Essentially, the contractor is the person (or company) that implements the construction process and concretizes the dreams of the client (promoter). As soon as a contract is signed, one of the critical assignments is the appointment is the site agent by the contractor, who sets up the site office and prepares an organogram, indicating the key persons whose activities are relevant to project implementation. This equally defines the channels of communication and programme of work, which consultant engineer must be abreast with. Snowdon (1979) enumerated the salient qualities of good site agent as:

i. Ability to understand and evaluate several aspects of the problems which undoubtedly will come his way;
ii. Having sufficient experience relating to broad-based technology so as to appreciate the contributions of others and detect possible omissions or faults;
iii. Having a logical, orderly, and systematic approach to his work;
iv. Ability to deal sympathetically but firmly with the people involved in the project;
v. Ability to communicate;
vi. Having well developed skills of leadership;
vii. Having a good working knowledge of the principles of management and organization as well as flexibility/receptivity to new ideas.

In fact, management is central to all other constituents of the actualization apparatus. Several project management techniques have been developed to help contractors complete projects on time and eliminate the cost associated with delays. They include the Grant Progress Chart (GPC), Critical Path Method (CPC), arid Programme Evaluation and Review Technique (PERT)

(Fubara, 1998; Agundu, 2000). A good GPC shows the activities and events with time matrix that permit comparisons and relationships to be worked out and readily inspected. This is particularly useful in consideration projects because the constituent activities can easily be broken down into manageable components, nonetheless, it does not directly show dependent relationships between the given tasks. The CPM involves systematic planning, scheduling, and controlling of projects. It underscores certain steps (operations), which are considered necessary to complete the entire project, which are conscientiously identified and shown in a graph (line chart) called network. The network indicates the order in which the operations can be undertaken comprehensively or the activities that must follow each other.

According to Ndiomu (1994), for the CPM to be useful, project activities by their nature should be specific having points/times and definite terminal points/times. The activities must be such that they can be identified in an orderly sequence, all connecting and leading to the completion of the project. This condition is particularly met by the construction industry and other fields having to do with setting up new corporate structures, introducing new products, R&D, producing engineering/architectural designs, planning play/television shows, or assembling sophisticated machinery.

In adopting the CPM, the analyst is expected to analyze and determine the individual tasks or operations involved, indicate the sequence of activities on a chart (network) estimate how long it will take to compete each activity, perform simple computations to locate the critical path (the series of interrelated operations which determine the duration of the entire (project), use the information so obtained to develop to most economical and efficient schedule (implementation programmed) of the project, follow the schedule (implementation programmed) to control and monitor the progress of work, and review the schedule frequently throughout the execution of the project. Expert content that the effective use of the CPM has the capacity to reduce costs and highly applaud it as:

i. Indicating relationships;
ii. Encouraging more effective planning;
iii. Helping to identify problem areas;
iv. Improving communication;
v. Bringing about effective resource allocation;
vi. Providing opportunity for alternative courses consideration and;
vii. Encouraging management by exception, which focuses attention on those jobs that critically determine the overall completion time.

In spite of these unique merits, the method is no substitute to strategic planning, as experts contend that, too often, any network drawn up in great deal, is superseded by changing circumstances even before the ink dried up. Furthermore, it is often too complex to be updated. To address the deterministic dimension, analysts employ the PERT, which is stochastic (probabilistic). The PERT is very close to the CPM but differs mainly in the procedure for determining activities' duration. Under the PERT, the expected time of completing an activity can be determined, using the formula.

te = $(t^o+4tm + tp)/ 6$

where te= Expected completion time

te= Optimistic completion time

te= Pessimistic completion time

All these are expected to facilitate timely completion of projects. As Perry and Thompson (1977) asserted, the longer the duration of the project/contract, the more it is influenced by inflation. The additional capital required to finance it may represent a large proportion of the original outlay. The picture could be worse than this in Nigeria where inflation is so upwardly erratic. The main problems facing project management in the Nigerian construction industry could be diagnosed with respect to the client, consultant, and contractor.

a. The client-related problems include
   i. Defining the project;
   ii. Funding; and
   iii. Delivering the site to the contractor.
b. The consultant-related problems related:
   i. Inappropriate/faculty design;
   ii. Faulty documentation relative to feasibility report, drawings, technical specification and bill of qualities; and
   iii. Poor project supervision/control.

The main perspectives in which the consultant's errors could increase the cost of the project to the detriment of the client relate to:

   i. Progress evaluation;
   ii. Certification of changes (variations);
   iii. Uneconomic design; and
   iv. Collusion and contractor.

c. The contractors-related problems related to:

i. Inconsequential organizational framework;
ii. Poor workmanship;
iii. Fake materials; and
iv. Failure to keep pace with the project phases (job programme).

The ability of the contractor to minimize these effects has to do with his strengths/opportunities in terms of logistics, specialized equipment, external funding, and internal capital base (Lock, 1983; Vine-Lott, 1979; Matthew, 1976; Ikegwuru, 1986). Other exigencies include unexpected weather changes, project modifications, contract disputes, local (site) problems, and project nature complexity.

Methodology

Port Harcout, the base of the study, is the economic nerve-centre of Nigeria's South-South geo-political zone many reputable construction companies have their area/regional offices or entire operations situated in this capital city of Rivers State.

In this study, the small construction enterprises were excluded because, as sole proprietorships, they lacked institutional management framework envisaged in our study. The study therefore concentrated on limited liability companies, of which 31 were identified. Eventually, 20 randomly selected firms were involved in the study.

Data analysis involved the use of frequency tables, whose efficacy is supported by the fact that analysts usually desire to know the percentage of the total number of sample objects that fall into a given class, than merely determining the actual frequency. For the test of research hypothesis (CRH), the Kendall coefficient of concordance (W) was applied to ascertain the significance of variability of ranking.

Data Analysis/Results

In the construction industry, several factors are recognized as influencing the performance of contracts, namely,

i. Faculty scheduling;
i. Faulty forecasting;
iii. Environmental volatility;
iv. Equipment breakdown; and
v. Executive errors, among others.

All the companies covered in the study ranked the factors as they affect their ability to executive contracts promptly, effectively, and efficiently. Preliminary analytical details are contained in the Tables 1 below:

Table 1:Ranking of Factors Influencing Contractors' ability meets Schedules.

5= very serious 4= serious 3=moderate 2=low 1= very low							
Factors	Rankings			Total/Score/Percentage (%)			
Faulty scheduling	5 (0)	4 (0)	3 (1)	2 (1)	1(4)	9	13.25
Faulty forecasting	5 (0)	4 (1)	3 (2)	2 (0)	1 (3)	13	19.12
Environmental volatility	5 (1)	4 (0)	3 (1)	2 (3)	1 (1)	15	22.06
Equipment breakdown	5 (1)	4 (1)	3 (2)	2 (2)	1(1)	19	27.94
Executive errors	5 (0)	4 (0)	3 (2)	2 (1)	1 (3)	11	16.18
Aggregates						**67**	**100.0**

Source: Research Data (2003)

With the data in Table 1 above, the Chi-square (X^2) statistic was determined using the Kendall coefficient of concordance (W), as presented in Table 2 below:

Table 2: Inferential Statistics for Hypothesis Testing

Particulars	**Score**	**$S = \Sigma R\text{-}R^1)^2$**	**Statistics**
Faulty scheduling	9	19.36	R=13.40
Faulty forecasting	13	0.16	S=59.20
Environmental	15	2.56	W=0.156
volatility	19	31.36	X^2 cal.=22.46
Mechanical	11	5.76	X^2 table 13.28
breakdowns			N=5
Executive errors			K=5
			d.f=4

Source: Research Data (2003)

Based on the results in Table 2, the calculated chi-square (X^2) was 22.46 with Kendall coefficient of concordance (W) of 0.156. This obtained outside the critical region of 13.28 at 99% level of

confidence, and empirically established that there is a significant difference in the ranking of the prevalent factors that hamper contract job completion on target time.

Discussion

In the light of the rankings and statistical results, it is expedient to spotlight on the contractors' experiences factor by factor.

i. **Equipment Breakdown:** Major projects involve the use of heavy- duty machines and clients are mostly governments or their agencies who are not so prompt in paying for completed jobs, not to talk of negotiating contract variations occasioned by delays as a result of equipment breakdown;

ii. **Environmental Volatility:** These relate to inflation, interest rate, fiscal measures, and other political exigencies, which take their toll on contract responsibility. A case in point the steel rolling mill at Ajaokuta. It is well over two decades since Nigeria first entered into Negotiations with the Russians to realize that strategic dream project. Various governments have come and gone; policies have evolved and changed with time; negotiations and renegotiations have been done over and over; and interest, foreign exchange and inflation rates fluctuations have brought pressures to bear on the project cost outlaw, yet there is no visibly progress. A contractor caught in this kind of web may go bankrupt except for extraordinary intervention;

iii. **Faulty Forecasting:** Faulty forecasting of project duration is sometimes influenced by the desire to win a contract under competitive bidding (due process). By giving a very optimistic time estimate a contractor merely tries to impress the client. When the contract is eventually awarded, the contractor then faces realities of project implementation then have to be faced. Faulty costing also arises in like manner, bringing along with it, untold logistic complications;

iv. **Executive errors:** These are the errors made by management in planning, positioning, and focusing a project. Such errors include the choice of staff to handle key positions; the choice of method of implementation; arrangement for sourcing of funds and guarantee of cash flow; framework for control and evaluation work process/ progress, with special reference to information flow, labor problems, and installed safety gadgets/procedures;

v. **Faulty Scheduling:** Where in an appropriate project network (schedule) is on ground, even if it is being meticulously followed, the faulty scheduling would still impede project actualization. Furthermore, various materials may not arrive at the expected time, not because orders were not placed in time but owing to extraneous factors. If this happens frequently then the whole schedule procedure could be thrown off balance to the

detriment of the promoters. In some government projects, after the initial mobilization fee, subsequent payments (cash flows) are usually out of phase with progress of work, sometimes forcing some contractors to stop work.

Conclusion/Recommendations

Although the upsurge of indigenous construction companies in Nigeria has been widely applauded, they are generally of low capacity compared to the expatiate counterpoints. They are thus most susceptible to the retrogressive tendencies associated with the factors underscored by the study. It is therefore recommended that:

i. Major government projects that are very complex should be awarded to expatriate firms that are willing to partner with reputable Nigerian firms, so that with time, there could be cross fertilization/ transfer of technology;

ii. The noble endeavors of research institutions towards developing local construction material substitutes should be visibly supported through standardization, commercialization, and optimization of the findings;

iii. Stringent laws to eliminate quack/sharp practices and promote professionalism in design and construction works should be enacted and religiously enforced;

iv. Indigenous construction firms, on their own part, should brace up with the challenge of modernization, by embarking on systemic fiscal, technological, and human capital development, while ensuring meaningful service quality and emphasizing total impression management.

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