

## IMPROVING SITE MANAGEMENT PRACTICES IN THE NIGERIAN CONSTRUCTION INDUSTRY: THE BUILDERS' PERSPECTIVE

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### Abstract

*Site management involves a combination of activities, which turn basic resources into a finished product. The effectiveness of managing production process cannot be economically attained by force, but requires the creation of conditions that will encourage self-motivation and bring about team spirit that is important to an efficient project execution. This study assessed management practices on construction sites through self administration of ninety questionnaires to the Builders present at a workshop. Thirty-two problems were identified from literature and respondents were asked to rank the problems. Results of the findings showed that inadequate enforcement of the existing enabling building regulations was ranked first while insufficient concrete cover and stripping formwork too early were the least ranked in a scale of 1 to 15. It was suggested that all the State Governments should ensure that appropriate legislation incorporating all the professionals in the building construction industry are in place.*

**Keywords:** Construction industry; Builders; Site practices; Professionals; Legislation.

### Introduction

The construction industry according to Kolawole (2002) is a unique one, it is vital to the existence of other industries in that it provides the environment under which other industries operate. The industry as stated by Akindoyeni (cited by Balogun, 2007) is responsible for 61% of the country's Gross Domestic Product (GDP) and employs up to 20% of the labour force. The industry is highly fragmented with contractors ranging from a few multinationals that employ hundreds of labour to the majority of contractors that employ less than ten employees. Construction projects as stated by Gilbreath (cited by Obiegbu, 2002) represent some of the largest and most complex undertakings known; when completed, a testimony is given of different technological methods adopted and huge consumption of resources such as time, money and people's talent used. There are two ways by which construction projects could be viewed; the technical view (in terms of concrete, steel, wood and pipes) and the complex set of roles and relationships (how the contract is planned, administered and managed) without which nothing could be achieved. These roles and relationships include how the participants interact with each other so that the project is a success and how

they resolve knotty issues encountered during the course of the project.

Mohammed and Anumba (2006) stressed that an increasing number of construction organizations are applying project improvement initiatives to improve their performance. The fundamental objectives are to deliver construction projects to the required quality more quickly and improve project performance. Unfortunately, practice is not that simple as construction work has become more complex technically and administratively, and there are several challenging engineering and management problems that occur on the site. According to Ashford (cited by Bamisile, 2004), while the Architect determines the concept, the proportions and form of the building, the Architect relies on the technical skills of the Structural Engineer, the Building Services Engineer and last but by no means the least, the practical know-how of the Builder in the production management of buildings. Starting from the possession of the site to the completion of a building project, the Builder is charged with the responsibility of managing the production process and supervision of artisans and craftsmen (Federal Republic of Nigeria, 2006).

In a related development, Obiegbu (2012) emphasized that a Builder must display good

site management practices that are important in maintaining efficiency, cost effectiveness and control on project. Based on this, good customer relations, good reputation and high integrity are maintained. Bamisile (2004) indicated that in order to achieve specified quality standards at first attempt, all the site activities must be gotten right at first attempt that must be managed by the Builder.

#### **Site Management on Construction Sites**

Bamisile (2004) drew attention to the fact that the effectiveness of managing production process cannot be economically attained by force, but requires the creation of conditions that will encourage self-motivation and bring about team spirit that is important to an efficient projection execution. Site management according to Mohammed and Anumba (2006) involves a combination of activities, which turn basic resources into a finished product. Obiegbu (2012) indicated that construction can be seen as the conversion of raw resource inputs into defined functioning output, by means of a managed process. This according to Construction IT (cited by Mohammed & Anumba, 2006) can range from organization of the materials, labour, and other resources on the site activities which control the flows of information and finance. The construction site is, therefore, seen as a key area where money is made or lost and where there is considerable scope for improving efficiency, productivity and quality. Obiegbu (2012) highlighted the following reasons why practising of good site management is imperative:

- Ensuring the most efficient and effective use of resources;
- Maintaining high standard of quality and workmanship;
- Maintaining high standard of health and safety on building sites; and
- Building trust and good relations with suppliers, other professionals and support organisations which leads to fewer problems, delays and disruptions.

In order to achieve good site management on construction sites, Obiegbu (2012) asserted that the following areas have to be taken very seriously:

- Project drawings, specification and contract documents must be interpreted correctly;
- All the projects requirements must be fully understood;
- Resources for the project must be correctly determined and well allocated;
- Functional site layout must be assessed and provided;
- Execution of the work must be well planned and scheduled while not forgetting the establishment of quality control measures;
- Compliance to statutory regulations should be ensured;
- Planning and programming the execution of work should be ensured;
- Construction processes must be monitored and controlled and corrective measures taking when deviation occurs;
- Ensuring that the right calibre of professionals is engaged with clearly defined roles.

Construction IT (cited by Mohammed & Anumba, 2006) divided site management practices into six sub-processes:

- Management, supervision, and administration of sites: Including correspondence, minutes, labour allocations, payroll, progress reporting, notices/claims, instruction, drawing register, and technical information.
- Commercial management: This covers estimating, valuations, sub-contracting, payment, variations, day works, cost-value reconciliation, final accounts, and cash flow management.
- Legal, health and safety: Management of legal, health and safety requirements on sites. This considers safety policy, insurance and building regulations.
- Planning, monitoring and control: This covers all activities associated with project planning and scheduling, typically the production of Gantt charts, network analyses, method statements, resource levelling, progress reports and exception reports.
- Delivery and materials' handling: The activities associated with the management of deliveries and the subsequent handlings

of materials on site are covered including requisitions, purchase orders, material call off, and plant returns.

- Production on-site and off-site: This considers activities supporting production such as testing, setting out, dimensional checks, and plant maintenance.

#### **Effective Site Management**

The effectiveness of managing the production process according Bamisile (2004) cannot be economically achieved through the use of force but the creation of conditions that will encourage self motivation and engender team spirit which is *sine qua non* to efficient project execution. Apart from these, Bamisile (2004) indicated that effective site management requires the balancing of the following by the contractor's team:

- Right persons: It is very important for contractors handling building projects to ensure that the right people are appropriately placed.
- Communication: Formal lines of communication have to be clearly established from the beginning of a project and must be brought to the attention of all the parties involved in the project. This is the way to avoid misleading information circulating.
- Progressing system: This is the act of checking, measuring and recording of progress in comparison with planned requirements, and the expatiating on any items subject to delay or likely to be delayed, in order to meet up with the plan.

#### **Methodology**

The study was conducted using the survey method. Survey design according to Creswell (2009) gives a quantitative description of phenomenon such as trends, attitudes, or opinion of population. Based on the results obtained, generalisation to the population is possible. Collis and Hussey (2003) describe a survey as a positivistic methodology that draws a sample from a larger population in order to draw conclusions about the population. Non probability convenience sampling method was adopted; this is a sampling method according to Teddlie and Yu (2007) and Collins *et al.*, (2007) that involves

choosing from a sample that is not only accessible but the respondents are willing to take part in the study. Ninety self administered questionnaires were distributed to the Builders that were present at the 2012 mandatory training workshop programme that took place in Lokoja-Kogi State, Nigeria. Though the sampling method used was non probability convenience sampling method, the centre played host to Builders from North Central States such as Kwara, Benue, Plateau, Nassarawa, Niger and Kogi States. Also, Builders from North Western States of Kaduna and Kebbi States were present at the training workshop. The significance of this spread is that Builders from eight States participated in the survey. Thirty-two problems associated with construction site practices were identified from the works of Horner and Duff (2001); Mohammed and Anumba (2006); Zietsman (2008) and Taiwo and Afolami (2011). Respondents were asked to rank these problems from the 1 (the least) to 5 (the highest). Apart from this, the respondents were asked to comment generally on site management practices from their own perspectives.

Thirty-five questionnaires were completed and returned representing thirty-eight percent (38%) of the total questionnaires administered. Sekaran and Bougie (2009) emphasised that one the disadvantages of survey method is the prevalence of low response rate. The results were analysed using percentages and relative importance index (RII)

#### **Results and Discussion**

Table 1 shows the percentage age group of the respondents. Eighty-five point seven percent (85.7%) of the respondents have their ages above 30 years. This is an indication of their level of maturity and to this extent, it can be concluded that the respondents were sufficiently experienced in responding to the questionnaires.

From Table 2, only 2.9% of the respondents had National Diploma (ND) in Building while the rest had Higher National Diploma (HND), Bachelor of Science/Bachelor of Technology or Masters of Science/Masters of Technology. Though none of the respondents had PhD,

they were adequately positioned academically hence the responses from them could be deemed reliable.

Table 3 shows about 14.3% of the respondents have been practising for up to 5 years while 85.7% of the respondents have been practising for more than 5 years. It is an indication that the respondents were familiar with site practices and to that extent are privy to the problems associated with the management of sites. Hence, their responses could be deemed to be in line with what is obtainable on sites.

Based on the problems associated with the management of site practices, inadequate enforcement of the existing enabling building regulations was ranked number one with relative importance index (RII) of 0.74. This is not surprising because the National Building Code of 2006 has not been overwhelmingly accepted by the States with the exception of Lagos and Jigawa States. In Niger State for example, the Building Law passed recently by the State Assembly excluded the Builders; the result of this action will be anarchy to say the least. Even in the Federal Government projects where strict compliance to the Building Code is expected, underhand cases abound based on the general comments of the respondents. This situation arises from the Professionals not limiting their expertise to their own field; hence they try to take over other professionals' duties and responsibilities of others. It is due to this inadequate enforcement that often times lead to building collapse cases that are common occurrence on construction sites.

Closely following in the ranking was the use of inexperienced supervisors. In order to evade paying professionals such as Builders in their employment by the contractors, inexperienced Builders are employed by these contractors where the right and justifiable salaries are not paid. Where this happens, the level of supervision from these supervisors becomes suspect and the end result may not align with the client's objective and hence the aim of having value for money will then be defeated. In addition to this, the Builders registered by law to practice in Nigeria are not up to three thousand in a country of over one hundred and fifty million people. This has

made building a subsector of the construction industry to be an all comers affair due to the limited number of Builders available.

In a bid to cut cost by contractors, defective or damaged formwork is used hence this was ranked as the third among the problems associated with the management of sites. The resultant effect will be non-alignment of the elements formed and at worst, collapse of such elements. It is not surprising therefore to have problems such as lack of inspection, employing unqualified supervisors, avoiding and ignoring inspection completely and non-compliance with specifications to be ranked number 4. In a way, these problems are related to the use of defective or damaged formwork.

Ranked 6<sup>th</sup> was lack of communication within the contractor's organisation. In recent years it has been identified that some of the fundamental components contributing to the construction industry's poor performance are its ineffective communication practices, its organizational fragmentation and lack of integration between design and production processes (Dainty *et al.* 2006). Successful communication between stakeholders in the industry can be seen to be a major contributory factor to project delivery as poor communication may lead to a delay in the decision making process that may in no small affects the successful completion of such projects. Everyone concerned with design, erection, use and eventual recycling of a building relies on effective communication, to get things done (Emmitt and Gorse, 2003). Within the contractor's organisation, according to Shutt (1992), the type of communication system and the speed with which it works are to a large extent a function of the size of the organisation. The smaller the company, the faster information will be disseminated. With large companies, a communication network has to be developed that ensure that the information necessary for decision-making gets to where it may be wanted. This can sometimes lead to overloaded "in" trays with the majority of the information being irrelevant to the particular department.

### **General Comments of the Respondents**

The last part of the survey was for the respondents to comment generally on site management practices from their own perspectives. The comments can be grouped under the following headings:

- **Enforcement:** More than 80% of the respondents reiterated that the bane of the site management practices was inadequate enforcement on construction sites creating a lawless environment.
- **Proliferation of quacks:** Respondents were of the opinion that because of the facts that the roles of Builders were not well appreciated by the public, there has been proliferation of quacks in the construction industry that has resulted in some cases to the spate of collapse buildings experienced in the country.
- **Foreign firms versus indigenous firms:** Some of the respondents believe that foreign firms have better site management practices than their indigenous counterparts. If this is anything to go by, foreign construction firms cornering substantial chunk of the volume of work available most of the time may be as a result of the way they handle their sites.
- **Government attitude:** The respondents opined that site practices on government projects were not something to write home about due to the lackadaisical attitudes of both the contractors handling the projects and the representatives of government who are responsible for inspection of the projects.
- **Finally,** one respondent specifically stated that dishonesty and incompetence were the major factors responsible for the deficiencies on construction sites. The respondent therefore called for the establishment of post construction certification committee made up of credible professionals by the government.

### **Conclusions**

An attempt has been made to identify problems associated with site management practices, respondents were then asked to rank these problems. Based on the results of the analysis, inadequate enforcement of the

existing enabling building regulations was ranked 1<sup>st</sup>; from all indications if the enforcement in place is adequate, many of the problems will have been solved. The issue of quackery, unqualified supervisors, using defective or damaged formwork among other problems will be reduced to their barest minimum. To this end, all the State Governments are urged to ensure that appropriate legislation incorporating all the professionals in the building construction industry are in place. It is not enough to have the National Building Code in place, it should be put to use; it is only when enforced to the letter that the spate of building collapse can be brought under control. Efforts should also be intensified by the Council of Registered Builders of Nigeria to embark on membership drive so that the number of Registered Builders in the country can be increased. The present number is grossly inadequate.

Communication is germane to effective management of sites not only within the contractor's organisation but among the various stakeholders in a given project. Communication and information management is a prime activity in construction, the entire construction process relies on vast quantities of information being generated, transmitted and interpreted to enable a project to be built, maintained, reused and eventually recycled. More specifically, construction industry participants are concerned with information exchange, dealing with drawings, specifications, cost data, programmes, plus other design and management information required for the successful completion of a building.

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Table 1 Classification of the age of the respondents

Age	20-30	31-40	41-50	51-60	>60
Percentage	14.3	25.7	42.9	14.3	2.9

Table 2 Classification of the academic qualification of the respondents

Academic qualification	ND	HND	BSc/B.Tech	MSc/M.Tech	PhD
Percentage	2.9	37.1	42.9	17.1	-

Table 3 Classification of the length of time the respondents have been practising

Duration	0-5	6-10	11-15	16-20	>20
Percentage	14.3	17.1	20.0	22.9	25.7

Table 4 The relative importance index (RII) of the problems associated with site management practices during the design and construction stages.

S/n	Problems	5	4	3	2	1	RII	Rank
1	Lack of inspection	8	7	11	7	2	0.67	4
2	Making use of inexperienced consultants by the client	4	7	13	7	4	0.60	10
3	Making use of unqualified consultants by the client	4	9	11	6	4	0.62	8
4	Avoiding and ignoring inspection completely	8	9	8	7	3	0.67	4
5	Non implementation of corrective actions during the construction process	4	8	11	8	3	0.61	9
6	Inaccurate measurement by the quantity surveyor	2	7	12	10	4	0.56	13
7	Making use of defective or damaged formwork	4	10	12	9	5	0.68	3
8	Inability to read and understand/interpret drawings	5	5	11	10	4	0.58	12
9	Insufficient concrete cover	1	7	11	13	3	0.54	15
10	Stripping formwork too early	1	9	11	6	8	0.54	15
11	Testing of soil not carried out especially in high rise buildings	7	9	9	4	6	0.63	7
12	Inadequate curing procedures	4	12	10	4	4	0.65	6
13	Lack of communication within the contractor's organisation	4	11	12	6	2	0.65	6
14	Non-compliance with specifications	7	8	12	4	3	0.67	4
15	Lack of communication between the client representatives and the contractor	3	10	10	10	2	0.61	9
16	Insufficient site supervision	6	4	12	9	2	0.60	10
17	Employing unqualified supervisors	5	11	10	4	3	0.67	4
18	Making use of inexperienced supervisors	3	15	11	4	1	0.69	2
19	Unqualified labour force	6	10	10	4	5	0.65	6
20	Wrong selection of materials	3	10	10	5	5	0.61	9
21	Inadequate storage facilities	0	10	16	5	2	0.61	9
22	Lack of proper equipment	4	12	11	4	3	0.66	5
23	Inaccurate drawings provided by the Architect	4	5	6	13	4	0.55	14
24	Cross referencing and detailed referencing on drawings lacking	3	9	10	13	0	0.61	9
25	Conflicting details on drawings	3	7	14	7	4	0.59	11
26	Details of sections on drawings lacking	3	6	13	11	2	0.58	12
27	Inadequate motivation of the labour force	3	12	12	3	5	0.63	7
28	Waiting for materials to be delivered	3	9	15	5	3	0.62	8
29	Waiting for the next trade to complete a given task	2	7	15	8	3	0.58	12
30	waiting for information or instructions	2	11	10	7	4	0.60	10
31	Contractual conflict between the consultants and the contractor	4	8	14	7	2	0.63	7
32	Inadequate enforcement of the existing enabling building regulations	11	12	3	5	3	0.74	1