

## Cost Management Practice of Construction Firms and Its Influencing Factors: Lessons from Southwestern Nigeria

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### ABSTRACT

The growing need at maintaining steady cost projection of construction projects has been an issue of serious concern to both the clients and the construction practitioners on sites. Also, cost deviation from initial cost plan and cost budget has been prevalent on construction sites and no concerted efforts have been made at addressing this phenomenon. This study therefore examined the factors that are considered to be affecting the cost management practice of construction firms in the southwestern Nigeria and also proffered possible ways of ameliorating the factors. Using survey approach, one hundred copies each of structured questionnaires were distributed to clients, contractors and consultants on construction sites in the study area while 72, 77 and 78 copies were duly filled and returned by the respondents respectively. Relative Importance Index (RII) technique was used for the analysis. The results revealed that poor leadership and inappropriate management, inefficient deployment of resources, excessive wastage of materials on sites, complex payment mechanisms, theft of materials on sites and variation during construction works are the prevailing factors affecting construction cost management practice in the study area. It was concluded that extra focus should be placed on the identified factors with a view to reducing cost of construction, enhancing construction performance and building confidence within the construction industry in the study area.

**KEYWORDS:** Construction firms; cost management; influencing factors; practice; southwestern Nigeria.

### INTRODUCTION

The growing need for construction of all types coupled with tight monetary supply has provided the construction industry with a big challenge in cost management. Client needs are generally in terms of time, cost and quality and indeed the project success radiates on these terms (Fagbenle & Owolabi, 2012). It is a complex task undertaken by construction firms/project managers in practice which involves constantly measuring progress, evaluating plans and taking corrective

actions when needed (Kerzner, 2003). In recent years, a number of studies have been carried out on the identification of influencing factors of project cost overruns in the construction industries in the globe. For instance, Mansfield *et al.* (1994) discovered that the most important variables causing construction delays and cost overruns in Nigeria are poor contract management, financing and payment of completed works, changes in site conditions, shortage of materials, imported materials and plant items, design changes, subcontractors and nominated suppliers. Akinsola *et al.* (1997) identified and examined factors influencing the magnitude/frequency of variations in building projects. These were: client characteristics, especially lack of prior experience and knowledge of construction project organization/production processes; characteristics such as type, size, complexity and duration of the project; and, project organization factors like design duration, percentage of design completed before tender, procurement and contract type, adequacy of information provided and number of subcontractors. Kaming *et al.* (1997) identified six factors influencing construction cost overruns on high-rise building projects in Indonesia as materials cost increased by inflation, inaccurate quantity take-off, lack of experience of project location, lack of experience of project type, inadequate planning, and inaccuracy of material estimate. Chimwaso (2000) evaluated the cost performance of public projects in Botswana by identifying the factors that influence construction cost overruns. He concluded that seven out of ten projects investigated had reported cost overruns and that the five influencing factors were incomplete design at time of tender, technical omissions at design stage, additional work at the clients request, adjustments of prime cost and provisional sums as well as contractual claims.

The structure of Nigerian construction industry is very complex in that it has a wide range of different types of clients and contractors. This consists of public and private clients, main contractors and sub-contractors, one-man firms and international companies, low technology firms and sophisticated specialists, builders and civil engineers and a whole range of construction professionals connected within the industry (Adamu, Bioku & Kolawole, 2015). The major divisions in the industry are building construction and civil or heavy engineering construction. Although the activities in the industry are been carried out on a project basis and could be within an organization or part of a construction programme (Adamu & Kolawole, 2011). The federal government of Nigeria is often seen to be involved in most complex projects such as road, sea and air port projects and some heavy engineering projects at about 64.9% of the project executed. This is followed by state government which is responsible for about 22.7% of the projects in the industry, although there is still some form of partnering with different groups of investors in the industry. The professionals in the industry are group of individuals often assembled into temporary and functional teams which include; architects, engineers, estate surveyors, project managers, quantity surveyors. These groups of professionals are expected to possess the relevant skills, knowledge, tools and techniques to achieve the project goals (Dada, 2013). The Nigerian construction industry continues to be the major stimulant in the country's economic growth and development. This strong interrelationship between the economy and the

construction industry further strengthens the need to ensure that project planning and management are cost-effective (Fagbenle, 2011).

Throughout the world, construction industry like many other industries is being transformed to meet the new demands of the twenty-first century. As the business environment within which the construction organizations or companies operate continues to change rapidly and in spite of the many changes which have affected construction industries world-wide, the structure of the Nigerian construction industry in terms of its operations has remained largely unaltered. Hence organizations or companies that fail to adapt and respond to the complexity of the new business environment tend to experience survival problems (Dada, 2013; Fagbenle, 2011; Lee *et al.* 2001). Although in the Nigerian construction industry, the few changes experienced are in the area of large increase in the number of indigenous Building contractors and quite a large number of multinational Civil Engineering contractors which have rather not impacted positively in project delivery in the industry. The scarcity of foreign exchange leads to frequent shortages of construction materials, most of which are imported. The foreign exchange also hinders attempts to develop local capacity in the production of conventional materials. Local construction materials remain sparsely used owing to the absence of enthusiasms of the stakeholders and end users as well as strict building regulations application in the industry (Adamu, *et al.*, 2015; Dada, 2013; Fagbenle, Makinde & Oluwunmi, 2011). The construction enterprise in Nigeria faces an unfavourable operating environment. The regulatory frame-work in the industry is generally inappropriate. Contract documents and procurement arrangements are unsuitable, considering the technical background of contractors, nature of work undertaken, traditional ways of dispute resolution and risk allocation principle. Payments to contractors and consultants on public-sector projects undertaken are very poor and delayed in the industry. Also, materials supply and delivery are unreliable (Fagbenle & Owolabi, 2012; Adamu & Kolawole, 2011). Construction companies in Nigeria also face problems in obtaining finance from the mortgage institutions. The industry is highly fragmented with few multinationals that employ hundreds of labour to the majority of the indigenous contractors that employ less than ten employees in the industry. With the increased competition in the Nigerian construction industry, construction companies procure many construction projects simultaneously (Adamu *et al.*, 2015). Owing to these challenges and limitations, the construction industry in Nigeria operates with low productivity and relatively high overall cost. In view of the fundamental objective of delivering construction projects to the required quality and time as well to improve project performance within the stipulated budget and requirement, construction stakeholders and construction companies within the Nigerian construction are to apply project improvement initiatives to improve their performance (Dada, 2013).

Cost management practice is the process of planning, estimating, coordinating, controlling and reporting of all cost-related aspects from project initiation to operation, maintenance and disposal (Horngren *et al.*, 1990). According to Luu *et al.* (2007), the cost management practice/system consists of a set of principles, methods and tools whose main objectives are to

cost and generate information in order to support different managerial decisions during the distinct phase of a project. As viewed by Kim (2002), particularly in the construction industry, cost management practice must include the processes required to ensure that the project is completed within the approved budget. Horngren *et al.* (1990) opined that cost management must not be isolated from other managerial functions and should play a key role in the implementation of the firm's strategies. They stressed further that as a consequence of the peculiarities of the construction environment, cost management practice/system must be dynamic, proactive and able to support different decision making processes as well as to protect the business from harmful effects of uncertainty. Processes of cost management practice include cost planning, cost estimating coordination, cost control and reporting (Kim, 2002).

Iyer and Jha (2005) remarked that the factors affecting cost practice/performance of construction firms are: project manager's competence; top management support; project manager's coordinating and leadership skill; monitoring and feedback by the participants; decision making; coordination among project participants; owners' competence; social condition, economical condition and climatic condition. Coordination among project participants was as the most significant of all the factors having maximum influence on cost performance of projects. Love *et al.* (2005) examined project time-cost practice relationships by using project scope factors for 161 construction projects that were completed in various Australian States. It was noticed that gross floor area and the number of floors in a building are key determinants of time performance in projects. Furthermore, the results indicate that cost is a poor predictor of time performance. Assaf *et al.* (2001) studied a cost monitoring system for Gaza Strip contractors. Enshassi *et al.* (2006) studied causes of contractor's business failure in developing countries. Factors were grouped together to only five main groups which are managerial, financial, business growth, business environment and political. Akinsola *et al.* (1997) and Enshassi *et al.* (2006) identified some of the factors affecting cost management practice as: changing and unrealistic objectives during the course of the project; unrealistic estimates; incomplete/inconsistence brief; uncoordinated design; ambiguous risk allocation; bad leadership and inappropriate management control; complex payment mechanisms; ineffective deployment of resources' excessive wastage of materials; materials theft; under-utilization/idleness of plant and under-pricing of tender documents. Besides the fact that most of these studies were conducted outside the Nigerian construction sites, their major focus was on cost performance. This study therefore examined the cost management practice of construction firms in the southwestern region of Nigeria with a view to identifying its influencing factors.

## RESEARCH METHODS

The aim of this study was achieved by the administration of three sets of questionnaires each to 100 clients, contractors and consultants in the six states (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti) constituting the southwestern Nigeria. 72, 77 and 78 copies of the questionnaire were respectively filled and returned by these respondents. Ten factors perceived

to have dominant influencing factors on the cost management practice of construction firms from the literature were used for the analysis. They are poor leadership/inappropriate management, inefficient deployment of resources, excessive wastage of materials on sites, complex payment mechanisms, material theft on sites, variation during construction works, under-pricing of tender documents, uncoordinated design, incomplete/inconsistent project brief and unrealistic project estimates. The data collected were analyzed using Relative Importance Index (RRI). The RRI for each factor was arrived at by the summation of the respondents to each of the five ratings of a factor ranging from 1, represented not important to 5, represented mostly important.

## RESULTS AND DISCUSSIONS

Presented in Table 1 are the factors influencing cost management practice of construction firms as perceived by clients, contractors, consultants and combination of the three categories of respondents. From the table, the top five factors that can influence an effective cost management practice of construction firms are poor leadership/inappropriate management (RRI = 2.24), inefficient deployment of resources (RRI = 2.23), excessive wastage of materials on sites (RRI = 2.16), complex payment mechanisms (RRI = 2.10) and material theft on sites (RRI = 2.08). This is followed by variation during construction works (RRI = 1.99), under-pricing of tender documents (RRI = 1.98), incomplete/inconsistent project brief (RRI = 1.86) and unrealistic project estimates (RRI = 1.83). The success or failure of any organization lies largely on its leadership and it is therefore not surprising that this factor was ranked first in this perspective. Concerning the clients, inefficient deployment of resources (RRI = 2.07) topped the list of factors that can influence cost management practice of construction firms. According to them unhindered deployment of human, material and financial resources to sites goes a long way in preventing unwarranted spending. Excessive wastage of materials on sites (RRI = 2.04), theft of materials on sites (RRI = 1.99), poor leadership/inappropriate management (RRI = 1.96) and under-pricing of tender documents (RRI = 1.88) were rated 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> respectively. The last five weighting factor by the clients are incomplete/inconsistent project brief (RRI = 1.83), complex payment mechanisms (RRI = 1.79), under-pricing of tender documents (RRI = 1.78), variation during construction works (RRI = 1.75) and unrealistic project estimates (RRI = 1.68).

Contractors' rankings seemed to be in tandem with the combined rankings of the respondents. For instance, poor leadership/inappropriate management (RRI = 2.43), inefficient deployment of resources (RRI = 2.36), excessive wastage of materials on sites (RRI = 2.27), complex payment mechanisms (RRI = 2.25), theft of materials on sites (RRI = 2.12), variation during construction works (RRI = 2.09), under-pricing of tender documents (RRI = 2.08) and uncoordinated design (RRI = 1.96) were rated in that order except unrealistic project estimates (RRI = 1.86) and incomplete/inconsistent project brief (RRI = 1.78) which were ranked ninth and tenth respectively. A similar pattern was observed in the first two rankings of the consultants with poor leadership/inappropriate management (RRI = 2.32) and inefficient

deployment of resources (RII = 2.26) topping the list. The premiums attached to these factors underscore the need for a concerted effort towards improving them for a robust cost management practice of construction firms. Other rankings by the consultants include complex payment mechanisms (RII = 2.23), excessive wastage of materials on sites (RII = 2.17), theft of materials on sites (RII = 2.12), variation during construction works (RII = 2.09), underpricing of tender documents (RII = 2.06), uncoordinated design (RII = 2.00), incomplete/inconsistent project brief (1.96) and unrealistic project estimates (RII = 1.94).

**Table 1: Relative Importance Index of Factors Influencing Cost Management Practice of Construction Firms**

S/ N	Factors	All			Clients			Contractors			Consultants		
		TWV	RII	Rk	TWV	RII	Rk	TWV	RII	Rk	TWV	RII	Rk
1.	Poor leadership/Inappropriate management	509	2.24	1 <sup>st</sup>	141	1.96	4 <sup>th</sup>	187	2.43	1 <sup>st</sup>	181	2.3 2	1 <sup>st</sup>
2.	Inefficient deployment of resources	507	2.23	2 <sup>nd</sup> d	149	2.07	1 <sup>st</sup>	182	2.36	2 <sup>nd</sup>	176	2.2 6	2 <sup>nd</sup> d
3.	Excessive wastage of materials on sites	491	2.16	3 <sup>rd</sup>	147	2.04	2 <sup>nd</sup> d	175	2.27	3 <sup>rd</sup>	169	2.1 7	4 <sup>th</sup>
4.	Complex payment mechanisms	476	2.10	4 <sup>th</sup>	129	1.79	7 <sup>th</sup>	173	2.25	4 <sup>th</sup>	174	2.2 3	3 <sup>rd</sup>
5.	Theft of materials on sites	473	2.08	5 <sup>th</sup>	143	1.99	3 <sup>rd</sup>	165	2.12	5 <sup>th</sup>	165	2.1 2	5 <sup>th</sup>
6.	Variation during construction works	452	1.99	6 <sup>th</sup>	126	1.75	9 <sup>th</sup>	163	2.09	6 <sup>th</sup>	163	2.0 9	6 <sup>th</sup>
7.	Under-pricing of tender documents	449	1.98	7 <sup>th</sup>	128	1.78	8 <sup>th</sup>	160	2.08	7 <sup>th</sup>	161	2.0 6	7 <sup>th</sup>
8.	Uncoordinated design	447	1.97	8 <sup>th</sup>	135	1.88	5 <sup>th</sup>	151	1.96	8 <sup>th</sup>	156	2.0 0	8 <sup>th</sup>
9.	Incomplete/Inconsistent project brief	422	1.86	9 <sup>th</sup>	132	1.83	6 <sup>th</sup>	137	1.78	10 <sup>th</sup> h	153	1.9 6	9 <sup>th</sup>
10.	Unrealistic project estimates.	415	1.83	10 <sup>th</sup>	121	1.68	10 <sup>th</sup>	143	1.86	9 <sup>th</sup>	151	1.9 4	10 <sup>th</sup>

**Note:** Rk - Rank

## CONCLUSION

The importance of a sound cost management practice cannot be over emphasized if the clients' objectives are to be realized in all ramifications. It therefore follows that good leadership and appropriate management of construction firms, efficient deployment of resources such as labour, plants and materials on sites and ensuring adequate and proper management of materials on sites must be accorded a topmost priority for a sound management practice. Also, clear, simple and concise payment mechanism of labour and other operatives should be

followed. In addition, all plants hired on sites must be fully utilized to justify their purpose, adequate security for materials on sites must be provided and every estimate provided for the project should be realistic. Project briefs should be complete, clear and consistent and should be followed during construction. Also, the design of the project must meet planning and statutory requirements. The project's design must be coordinated and should take into cognizance the buildability, maintainability, health, safety and sustainability of the proposed building. Generally, concerted efforts should be placed on the identified factors affecting cost management practice in an attempt to reduce cost of construction, enhance construction performance and gain more confidence within the construction industry.

This research has focused on the construction industry in southwestern Nigeria, it will be appropriate if similar study is conducted in other regions of the country and outside Nigeria.

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