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COST OF CONSTRUCTION PROJECTS IN NIGERIA - CHALLENGES AND WAYS FORWARD-

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The persistent escalation of cost of both building and infrastructural projects in Nigeria is alarming. In other to improve upon the existing scenario, this study investigated and evaluated determinants of construction cost in Nigeria. The objectives of the study include: Comparative cost analysis of construction projects in Nigeria with that of some African countries, evaluation of construction cost matrix and suggestion to improve on existing scenario. Data obtained through stratified probabilistic sampling technique from 50 Nigerian Quantity Surveyors through structured questionnaire were analyzed quantitatively and the findings of the study revealed that high cost of construction materials, inflation, monopolistic market for construction materials, deliberate inflation of contract sum and kick back syndrome are major determinants of cost of construction in Nigeria. The study concluded that to curb this menace, measures outlined in the study must be implemented.

Keywords: construction, cost, issues, Nigeria, quantity surveyors, ways forward

INTRODUCTION

Successful project performance depends on some factors which include; Cost, quality and time among others. Samuel, Olatunji, Oke, Aghimien and Sakiru (2016) opined that among these three factors, cost of construction is perhaps the most significant. According to compendium report on road infrastructure & related development in Nigeria (2019) unless effectively managed cost of construction can escalate. It is a common arguable perception that cost of construction in Nigeria is far more than that of the contemporary African Countries and even beyond. Ajanlekoko (2017) however opined that it is preferable to refer to cost of construction in Nigeria as one of the highest in comparison with other countries. The notion that cost of construction in Nigeria is high compare to other countries in the world is subjective. According to Ajanlekoko (2017), there is no known empirical data base that established this assertion. But, asserts that it is safe and true to conclude that cost of construction in Nigeria is high. Even though Nigeria as a nation shares similarities in procurement methods, tendering approaches, contract types with other nations (Oyediran, Dada & Zannou, ND) asserted that it

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is still a prevailing perception that construction cost in Nigeria ranked among the highest in the world. Against this background, it is imperative to explore the existing scenario in Nigeria and possibly recommend implementable solutions to overcoming perceived causative factors contributing to relatively high construction cost of projects in Nigeria. This study investigated and evaluated determinants of construction cost in Nigeria in other to impact positively on the economy. It appears from the foregoing that, there is need to explore further on this area of concern since most submissions are based supposition than in-depth research. Beyond the cost of construction in Nigeria, there is need to evaluate construction cost determinants in other to establish their contributions and suggest ways to ameliorate on the existing scenario. This is the focus of the study.

This study covered government sponsored building and infrastructural projects in Nigeria.

Statement of the research problem

World Bank (2017) posited that construction is often refers to as driver of economy. Nigerian as a developing country has construction sector as key economy sector second to oil and gas sector. In the event that a nation construction industry is in a perilous state, then such a nation experience difficulty in steady growth. Findings of previous studies disclosed that the cost of construction of roads in Nigeria is alarming in comparison with other nations. Abuja Centre of Social Justice, ACSJ (2018) based on previous study conducted by World Bank (2000) reported that, constructing a kilometres of road in Nigeria cost between 400 million and over N 1 billion naira. This submission was based on specific comparison between the roads with same grade constructed in Nigeria and some African countries. The report referred to the award of 127 kilometres Lagos-Ibadan expressway at 167 billion by Federal Government of Nigeria in 2013 and similar contract of 1,028 kilometres awarded in same year between 167 billion and 240 billion by Economic Community of West African Countries (ECOWAS) as link roads between Lagos, Nigeria; Cotonou, Benin Republic; Togo; Accra, Ghana and Abidjan, Cote D'Ivoire. In essence, the number of kilometres that was covered by ECOWAS project was eight times higher than that of Lagos-Ibadan expressway and the cost per kilometres far lower than that of Nigeria. Mathematically, the maximum cost of ECOWAS road was 234 million naira, whereas that of Nigeria awarded by Federal Government was 1.3 billion naira per kilometres. What this could connote is that for every kilometres of road constructed in Nigeria at the time of this report, cost of eight kilometres could have been lost. If this trend continues, Nigeria may continue in the cycle of developing nation for many years to come instead of attaining the status of a developed country. From pre to post independence, many capital intensive projects have been constructed and many more going and still very many yet to be constructed. These projects have been tagged to be too high in term of cost and the most popular opinion is that cost of construction in Nigeria is perceived to be the highest among its contemporary in Africa and beyond (Samuel, et al, 2016). This study, therefore, tends to investigate this assertion, evaluate contributing factors and recommend ways to overcome this challenge.

Research questions

In response to the statement of the research problem, it is pertinent to raise and find answers to these questions:

i. Is construction cost in Nigeria higher than that of the contemporary African countries?
ii. What are the key indicators of construction cost in Nigeria?
iii. Are there possible workable synergies to address challenges pertaining to construction cost in Nigeria?

Aim and objectives

This study investigated and evaluated determinants of construction cost in Nigeria. The following objectives addressed the aim of the study:

i. Comparative cost analysis of construction projects in Nigeria with that of some selected African countries;
ii. Evaluation of construction cost matrix and;
iii. Recommend workable synergies to ameliorate high cost construction projects in Nigeria.

LITERATURE REVIEW

Construction cost matrix – Nigeria scenario

According to Danso and Obeng-Ahenkora (2018) rise in price of building materials is peculiar to all countries world over. Ogbuagu (2008) refers to building material as tangible items that are incorporated into construction of building or other aspects of construction and classified these as natural and artificial. Classified as natural sand, stones, wood and the artificial include tiles and paints. Predominant factor that determine construction cost is building materials (Abiola, 2000, p. 37). This account between 40-80% of construction cost (Atolagbe, 2009). Due to decline in quality of few indigenous building materials, many clients and other key players in the Nigeria construction industry prefer the imported materials which they, in most cases procured with a cost higher than that of materials manufactured locally (Adogbo & Kolo, 2009). According to Atolagbe (2009) this over dependent on foreign or imported building materials as eroded the trust many clients have for locally made materials. Emmanuel (2017) posited that building materials have significant impact on construction projects and asserted that only 10% of the reinforcement bars utilized by Nigerian construction industry annually are produced locally. Nigeria the giant of Africa as popularly refers as limited or very few manufacturers of significant building materials like cement, reinforcement bars, tiles hence the reasons for turning to importation. In identifying other factors that influence cost of construction, Ajanlekoko (2017) attributed causes of high cost of construction to funding issues. According to Samuel et al (2016) professionals' failure to carry out their statutory obligations in a diligent and responsible manners leads to unwarranted adjustments in drawings during construction, leading to high cost upshot. Inadequate cum ineffective project management skills leads to poor monitoring leading to project cost overrun as a result of rework, wasting of resources (Daniel & Anny, 2016). The perception all over the world is that the client has the money to pay for construction project and the contractor executive the project. In Nigeria, the situation is slightly different. Daniel and Anny (2016) submitted that even the prominent client, the government, is more culpable in this regard. Excessive delays and outright non payments of works executed by Nigeria government is no longer news leaving contractors no choice than to go bankrupt and in most cases go out of business since they often

not interested in seeking a redress in court to sustain relationship. Daniel et al (2016) further observed that shoddy practices, kickback syndrome and professional negligence are also predominant causes construction cost escalation. Previous report by ACSJ (2018) disclosed that deliberate inflating Government financed projects as become hallmark in the Nigeria procurement system. Idoro (2013) posited that due to observed irregularities and cost escalation of cost of construction in Nigeria concluded Nigeria has the highest construction cost in the world. This submission appears to differ from the opinion of Ajanlekoko (2017). This study tends to feel this gap by establishing a reliable research position on the actual scenario of cost of construction in Nigeria. Aside from contributing to body of knowledge, the output of this research work would be a reference point on the true nature of construction cost in Nigeria and suggestive ways of ameliorating the existing situation.

RESEARCH DESIGN AND METHOD

The study investigated and evaluated determinants of construction cost in Nigeria. Research design adopted for the study was triangulation method. Both stratified and random probabilistic sampling technique was adopted. Nigerian Quantity Surveyors were divided into stratum according to their professional qualifications namely; Fellow, Member and Probationer. Each had an equal chance in filling the questionnaire which formed the primary data. According to Nigerian Institutes of Quantity Surveyors, NIQS (2019) directory of members, these cost experts are referred to as Quantity Surveyors. The research is limited to this category of professionals because they are the custodian of construction cost. Relevant extant literature formed the sources of secondary data. Well-structured questionnaire that address the objectives of the study was randomly distributed to 100 registered Fellows, Members and Probationers of the NIQS but was only able to retrieve 54 copies. The first objective, comparative cost analysis of construction projects in Nigeria with that of some selected African countries was achieved through cost per square meter (cost/m2) analysis of various projects across 12 countries considering their capital cities. This information was sourced from African Property and Construction Cost Guide, AECOM (2018). The study puts into consideration the peculiarity of each country considered in term currency and official exchange rate using dollar as a uniform basis for comparison. Due to lack of adequate published information on comparison of cost of construction across countries, a further step was taking to validate the analysis provided by AECOM, respondents were asked through structure questionnaire to evaluate the cost of construction in Nigeria in terms of Likert's scale of (1-5) using: 5- Very high, 4- High, 3-Uncertain 2- Low, 1- Extremely low and the results were further subjected to analysis using relative importance index (RII) and results were ranked and a comparison of the assertion obtained from AECOM and other related reliable extant literature were compared and conclusion was drawn. To further authenticate the conclusion drawn, respondents where further asked to indicate the basis for their position. This was necessary in other to authenticate the data obtained. The second and objective, evaluation of construction cost matrix was accomplished through reviewed of extant literature and analysis of data obtained from respondents through questionnaire. Beyond the construction cost indicators obtained from extant literature, respondents where ask to indicate additional factors that influence

construction cost in Nigeria and evaluate them in term of level of agreement. Likert's scale of (1-5) using: (1-5) using: 5- Strongly Agree, 4- Agree, 3-Uncertain 2-Disagree, 1- Strongly Disagree was adopted and the results obtained were further subjected to analysis using relative importance index (RII) and results were ranked. The findings were compared with the extant literature and conclusion drawn as well. For objectives three, recommendation of workable synergies to ameliorate high cost construction projects in Nigeria. Like in objective two, some remedies to improve on construction cost in Nigeria where identified and many other remedies sourced from the respondents through questionnaire where assessed using Likert's scale of (1-5) using: (1-5) using: 5- Strongly Agree, 4- Agree, 3-Uncertain 2-Disagree, 1- Strongly Disagree. The formula for RII as submitted by Ojo (2017) is as follow:

$$\text{Relative Importance Index (RII)} = \frac{\text{Sum of weights } (w1 + w2 + w3 + w4 + w5)}{(A \times N)}$$

Where w is the weighting given to each variable by the respondents, ranging from 1 to 5. A is the highest weight (i.e. 5) in the study; and N is the total number of samples

DATA COLLECTION, ANALYSIS AND RESULTS

Data collection

Table 1.0: Questionnaire Administration

Distributed	Expected	Retrieved	Properly filled	Used for analysis
100	80	54	50	50

Source: Field Survey

Background of the respondents

Table 1.1: Demography of the respondents

Academic Qualification	Frequency	Percentage
PhD	9	18
Master	19	38
Bsc/BTech	12	24
HND	10	20
Professional Qualification	Frequency	Percentage
Fellow	6	12
Member	34	68
Probationer	10	20
Years of Experience	Frequency	Percentage
Less than 5years	8	16
5 – 10years	18	36
11 – 15years	11	22
16 – 20years	5	10
Above 20years	8	16
Total	50	100

Source: Field Survey

The combination of academic, professional qualifications and years of experience of the categories of the sample reinforces the reliability of the data collected and analyzed. Among the Quantity Surveyors, 28 of them which is more that 50% of the entire sample had more than 1st degree as they constituted the majority with practical experience above 10years. Fellow and members of the Nigerian Institute of Quantity Surveyors (NIQS) combined, formed 80% of the respondents. Against this background, the results of this research are factual and reliable in conjunction with reliable extant literature.

Cost of construction projects in Nigeria and some selected African countries

Table 1.2: cost of construction in Nigeria – the Nigerian quantity surveyors' perception

	Categories of Respondents				
Quantity Surveyors' Responses	(Fellows)	(Members)	(Probationers)	R	NR
High	3	18	4	1st	25
Very High	3	12	4	2nd	19
Moderate	0	2	2	3rd	4
Low	0	0	0	4th	0
Extremely low	0	0	0	4th	0

Source: Field Survey
Key: RII=Relative Importance Index, R=Ranking, NR=Number of Respondents

Table 1.3: Nigerian quantity surveyors' basis for submission of cost of construction in Nigeria

Quantity Surveyors' Responses	(NR)	(Percentage)	Ranking
Practice	41	82	1st
Published Research article	4	8	2nd
Newspaper article	2	6	3rd
Personal opinion	2	4	4th

Source: Field Survey
Key: NR=Number of Respondents

Table 1.4: Cost of Construction Projects in Nigeria and other African Countries Compared

	Overall Average Cost of Construction/Square Meter in US Dollars	
African Countries	(Total Average)	(Ranking)
Nigeria (Lagos)	2,629	1st
Angola (Luanda)	2,625	2nd
Senegal (Dakar)	1,772	3rd
Ghana (Accra)	1,650	4th
Rwanda (Kigali)	1,500	5th
Botswana (Gaborone)	1,372	6th
Mozambique (Maputo)	1,319	7th
Uganda (Kampala)	1,190	8th
Zambia (Lusaka)	1,183	9th
Kenya (Nairobi)	1,053	10th
Tanzania (Dar es Salaam)	997	11th
South Africa (Johannesburg)	971	12th

Source: African Property & Construction Cost Guide (2018)

Tables 1.2, 1.3 and 1.4 show the view of Nigerian Quantity Surveyors on the cost of construction projects in Nigeria and the basis for their various submissions and the

scenario in some selected African countries. The projects considered basically were government financed projects which include buildings and infrastructural facilities which was not limited to roads construction. The basis for limiting the research to corporate project is the ease of tracking of the cost record in comparison with the private sector. Conclusion drawn from the tables was that, most of the Quantity Surveyors that responded to the questionnaire practice as consultants which afforded them the opportunity to track the cost of projects from inception to practical completion. Most of them also extend their practice beyond Nigeria border which gave them additional opportunity to have compared cost of construction in Nigeria with other African countries. From their submission, most opined that cost of construction projects in is high compared to other African countries that the study covered. An investigation was also carried out to validate the position of Nigerian Quantity Surveyors by computing the cost per square meter of different projects across some selected African countries as deduced from African Property & Construction Cost Guide, APCCG, (2018) as indicated in Table 1.3. Though the basis of comparison was same, it also has its limitations as there could be inter border factors that could influence cost of construction in various countries such as warfare and so on (Rebosio & Wam, 2011). To further strengthen the reliability of published data from APCCG, the report from World Bank (2018) on comparison of cost construction across nations even beyond Africa countries further reinforced the research findings.

Evaluation of construction cost matrix in Nigeria

Table 1.5: Construction cost matrix Nigeria scenario

Significant Construction Cost Indicator(s)	SA (5)	A (4)	U (3)	D (2)	SD (1)	RII	R	NR
High cost of construction materials	34	13	2	0	0	0.94	1st	50
Inflation	19	21	8	2	0	0.89	2nd	50
Monopolistic market for construction materials	22	22	4	2	0	0.86	3rd	50
Deliberate inflation of contract sum	12	25	9	4	0	0.85	4th	50
Kick back syndrome	21	16	13	0	0	0.83	5th	50
Shoddy practice	21	18	9	2	0	0.83	5th	50
Difficulty in accessing loan by contractor	19	21	8	2	0	0.83	5th	50
Delay in execution of construction projects	16	26	6	2	0	0.82	8th	50
Over dependent of imported materials	27	19	3	1	0	0.82	8th	50
Professional Negligence	21	21	8	0	0	0.78	10th	50
Unwarranted upward review of contract sun	17	25	9	1	0	0.78	10th	50
Construction method	13	15	16	6	0	0.74	12th	50

Source: Field Survey
Key: SA=Strongly Agree, A=Agree, U=Uncertain D=Disagree, SD=Strongly Disagree, RII=Relative Importance Index, R=Ranking, NR=Number of Respondents

It appears from table 1.5 that besides high cost of construction materials and inflation that were ranked 1st and 2nd respectively that are economically influenced other factors that influence construction costs in Nigeria are humanly or systemically motivated. Government policy and unfriendly or non-conducive business environment for investors to explore and establish industry or companies has resulted to monopolistic market condition which translates to periodic high cost of construction materials even when inflation rates reduces. Putting

construction cost in Nigeria under check is a possibility that is attainable as indicated in factors 4 – 6 on table 1.5.

Probable synergies to address issues pertaining to construction cost in Nigeria

Table 1.5: Probable construction cost escalator arresters in Nigeria

Construction Cost Escalator Arresters	SA (5)	A (4)	U (3)	D (2)	SD (1)	RII	R	NR
Engage only certified and qualified cost experts	33	14	3	0	0	0.92	1st	50
Elimination of monopolistic market	29	17	3	1	0	0.9	2nd	50
Government should form omnibus entity	29	16	5	0	0	0.9	2nd	50
Government should formulate working policies	28	19	3	0	0	0.9	2nd	50
Eliminate delays in execution of projects	27	21	2	0	0	0.9	2nd	50
Loan should be easy to access	27	17	5	1	0	0.88	6th	50
Government should establish factories	28	15	3	3	1	0.86	7th	50

Source: Field Survey
Key: SA=Strongly Agree, A=Agree, U=Uncertain D=Disagree, SD=Strongly Disagree, RII=Relative Importance Index, R=Ranking, NR=Number of Respondents

Engaging only certified and qualified cost experts was identified by the Quantity Surveyors as the most important of all remedies to curb skyrocketing cost of construction projects in Nigeria. It is fundamental to note that erroneous estimation is a product of quackery misleading the clients. It is a common established perception that correct and reliable estimate at pre, construction and post construction stages is a tool for accurate cost forecasting. Elimination of monopolistic market was rated 2nd with government should form omnibus entity, Government should formulate working policies and eliminate delays in execution of projects.

DISCUSSION OF FINDINGS

Cost of construction projects in Nigeria

The findings of the research indicate that the common position of the Nigerian cost experts is that cost of construction project in Nigeria is high as indicated in table 1.3. This inference is in consonant with previous submissions of Ajanlekoko (2017) and Oyediran et al (ND) both asserted that cost of construction in Nigeria are relatively high, though acknowledged that there is inadequate research works to substantiate this popular perception. The findings of this work differ from the submission of Idoro (2013) that opined that cost of construction in Nigeria is the highest in the world. The results of this study add to knowledge in this area of concern and could provide remedies to curb escalating cost of construction in Nigeria. The findings of this study provided the intuition for the researcher to compare the construction cost/m2 in Nigeria with that of some African countries, the factors that significantly influence cost of construction in Nigeria and how the situation can be put under check through some control measures.

Comparative cost analysis of construction projects in Nigeria with that of other African countries

An x – ray of the research carried out on cost per square meter (cost/m2) of various building types by African Property and Construction Cost Guide, AECOM (2018) covering the mega/capital cities in 12 African countries as indicated in table 1.4 revealed that Nigeria has the highest cost of construction per square meter. The cost/m2 of different types of constructions projects were covered by AECOM through their offices in each considered African countries through well trained and experienced construction cost experts. The approach was that, cost/m2 was obtained from these countries using their currency and the results were converted to US Dollar to form a uniform basic for cost comparison. The construction projects covered included; residential, commercial, hotel and industrial and the overall average obtained and ranked. Because of the perceived limitations of this approach, to validate or investigate this submission, Nigerian construction experts of different categories (fellows, members and probationers) were asked to indicate their views of construction cost of projects in Nigeria in the scale of extremely high (5), high (5), uncertain (3), low (2) and extremely low (1) as indicated in table 1.2. Their submission is in agreement with that of AECOM. However, World Bank report as submitted by Rebosio et al (2011) and Turner and Townsend (2018) highlighted the set back of the approach adopted by AECOM and submitted that any change in the exchange rate makes a huge difference; if a particular currency is strong compared to the base currency, the cost of construction appears to be expensive. It was recommended that a more reliable approach of comparing the cost of construction across countries is using the purchasing power parity (PPP). The supposed advantage of this method is that its leaves exchange rate out of the equation with a caveat that a global firm looking to build overseas, it can be more convenient to look at cost in its home currency.

Evaluation of construction cost matrix

Predominant among factors significantly influencing cost of construction projects in Nigeria are high cost of construction materials (Ranked 1st, RII = 0.94) followed by Inflation (ranked 2nd, RII = 0.89), monopolistic market for construction materials (ranked 3rd, 0.86) and deliberate inflation of contract sum (ranked 4th, 0.85) followed by other factors in the order of importance as indicated in table 1.3. Similar study conducted by Danso and Obeng-Ahenkora (2018) in Ghana, identified cost of construction materials and followed by excessive reliance on imported materials for construction as significant factors that contributes to escalation of cost of construction. Even with different respondents and countries, cost of construction materials tends to be the most significant factor that propelled high cost of construction. This finding mirrors the submission of Emmanuel (2017) that posited that among all factors that contribute to cost of construction, the cost of building materials appear to be the most significant of all.

Synergies to address issues pertaining to construction cost in Nigeria

The findings of this research disclosed that engaging only certified and qualified cost experts, elimination of monopolistic market, formation of omnibus entity whose mandate is to investigate and prosecute construction contract players misdeed by government, formulation of working policies by government, elimination of delays in execution of projects, easy access to loan for contractors and establishment of factories that manufacture construction materials both by

government and private investors could address high cost of construction in Nigeria. The findings of this study agree with the submission of Ajanlekoko (2017).

CONCLUSION AND RECOMMENDATION

Conclusion

The study therefore concludes that the construction cost of projects in Nigeria is high in comparison with contemporary African countries. Significant factors responsible for this are: High cost of construction materials, Inflation, Monopolistic market for construction materials, deliberate inflation of contract sum, Kick back syndrome, Shoddy practice, Difficulty in accessing loan by contractor, delay in execution of construction projects, Over dependent of imported materials, Professional Negligence, unwarranted upward review of contract sum and construction method. To curb this menace, the study submits that only certified and qualified cost experts, elimination of monopolistic market, formation of omnibus entity, formulation of working policies and elimination of delays in execution of projects by government by removal of bottle neck in process in payments of contractors.

Recommendations

The study recommends that:

i. Cost of construction can be minimized in Nigeria by eliminating monopoly in the manufacturing industry thereby encouraging many investors to invest and promote healthy competition like telecommunication industry
ii. Formation of Omnibus government entity to regulate the activities of construction activities is long overdue. The existing Bureau of public procurement seems not to be enough to address high cost of construction in Nigeria and
iii. All stakeholders in the Nigerian construction industry should learn and adopt the ways of other nations whose cost of construction are relatively low.

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