



## FEASIBLE FACTORS IN THE DEVELOPMENT OF CONSTRUCTION INDUSTRY IN OYO STATE, NIGERIA

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### ABSTRACT

*This paper identifies ten key factors associated with the development of the Construction Industry in Nigeria using Oyo State as a Case Study. Each of these factors encompasses several other underlying factors militating against the development of this Industry in Nigeria. The paper exposes why the Nigerian Construction Industry is comatose particularly in the face of many failures of constructed structures. The paper analyses the data collected from a structured questionnaire generated to establish the key factors that can elevate the Construction Industry in the most populous black nation on earth enough for us to start exporting our services to other countries of the world. The questionnaire in Likert scale was administered to a sample size of 195 respondents out of 3,900 construction professionals representing 5%. The key factors identified by the selected professionals were 40. In order to achieve parsimony and reduce the data sets to a manageable size, a combinatorial approach of factor analysis and principal component analysis was adopted. An initial capture of factors was made for each data set, STRENGTH and IMPORTANCE, using a Principal Component Analysis approach. Thereafter, the original unrotated solution was refined through a series of rotations using both orthogonal and oblique options to synthesize the variables into 10 factors. The hypothesis tested was that development in construction industry is a function of management skills, availability of construction materials and conducive environment using a regression analysis with  $Y = a + b_1X_1 + b_2X_2 + e$ .*

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**Key Words:** *Feasible Factors, Development, Construction Industry*

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## **INTRODUCTION**

Construction Industry as defined by Tambosi (2009) is the broad conglomeration of industries and sectors which add value in the creation and maintenance of fixed assets within the built environment involving engineering and construction works, supply contracts and professional services contracts. In other words, the Construction Industry embraces the process by which the physical infrastructure are planned, designed, procured, constructed or produced, altered, repaired, maintained, and sometimes, demolished. The construction industry is one of the productive sectors that constantly contribute to the economy. However, It indicates that, since construction involves long term investment and long term risks, it will be the first to be suspended at the first sign of an economic downturn, and the last to be revived during an economic upturn leading to long periods of recession for the construction sector whenever an economic recession is experienced. In Nigeria, the state of the local Construction Industry has remained poor. Performance constraints include inadequate capacity of contractors and consultants, poor public sector delivery capacity, corruption, erratic work opportunities, use of old-fashioned technologies and practices, lowly state of the economy and lack of effective supporting policies. What has been around has only been centred on theories that are yet to see the light of day in practice. The theoretical framework built upon available literature has reached the heavens, and no one has deemed it necessary to demand that those in authority do something about it in this country; it is lying fallow in the archives of our libraries where history might bury them in layers of dust. Except for the squiggles on paper, close to nothing is being done to uplift this abandoned Industry in our nation. Nigeria is the home of such architectural master pieces as Third Mainland Bridge in the financial capital of the country, Lagos; Abuja National Stadium in the Federal Capital Territory; Spider Building of the Faculty of Engineering, Obafemi Awolowo University, Ile-Ife; National Arts Theatre, Iganmu, Lagos; T. B. Joshua's Tabernacle, Ikotun, Lagos; Central Bank of Nigeria edifice at Abuja; Obudu Mountain Cable Car at Calabar, the first capital of Nigeria; The National Mosque at Abuja, and so on. The only hitch there is that all of them are

To the creation of indigenous professionals of our Construction Industry. Perhaps this is the reason why they are all standing today, even if they do not really meet today's fashion. According to Yussuff et al (2014), we are retreating

further and further from the natural world of forests, caves and bonfires, and moving deeper and deeper into the man-made world of skyscrapers, automobiles and aeroplanes, computers, remote control and air-conditioned areas. So, now is the time more than ever, to showcase our expertise in the Construction Industry in the quality of architectural designs 'we should be adorning our dear motherland with. Unfortunately, the Nigerian Construction Industry is not progressing in spite of the fact that we can boast of some of the best professional personnel in the world. Why is this the case? Why should we be blessed with some of the highest ranking experts in the world of the Construction Industry, yet if even our professional bodies want to construct our Association House, they would employ foreigners? Our reason cannot be far-fetched other than there is no trust among our experts enough to assign such auspicious responsibilities to ourselves in-house. Although we respect all the high-sounding academic and professional qualifications of our specialists, we do not believe they will give us the quality we require when it comes to delivery of service. And believe this or not, we can criticize. Possibly, this can be why we have been going round in circles rather than recording progress. Construction Industry professionals are well aware of the importance of quality training; and that partnering agreements among the parties in the construction process constitute an important step in obtaining a high quality product. We do not see how this knowledge can breed mistrust among our people. But there is no use denying that it is there.

### **STATEMENT OF THE PROBLEM**

Nigerian public generally believe that most building projects fail to offer value for money, construction projects are said to cost too much, take too long to complete and are too prone to failure. In a study conducted by Ibironke (2012), it was discovered that non-compliance with time, costs and quality management procedures as well as high cost of construction have led to project abandonment. The consequence of this has resulted in the loss of public confidence in the industry; corroborating Bamisile's opinion that the industry is a colossal failure.

So such financial investments in the development of the industry end up with nothing except the abandoned reports on the shelves .of our libraries. When they are consulted eventually, they are only used for academic treatises and professional conference papers from which no policies emerge.

While admitting that the Construction industry in Nigeria is faced with a lot of problems, Owolabi et al (2014) reported that timely delivery of projects within

budget and to the level of quality standard specified by the client is an index of successful project delivery in the Hong Kong construction industry. It was the failure to conform to these yardsticks which results in various unexpected negative effects on the projects. Ordinarily, when projects are delayed, they become extended and therefore, incur additional cost.

## **MATERIALS AND METHODS**

For this research, cross-sectional survey design method was adopted.

Random sampling technique was used in this study via a structured questionnaire in Likert scale administered to a total of 195 respondents (5%) out of a sampling frame of 3,900 registered professionals and registered contractors in Oyo State.

As a result of the difficulties encountered in identifying variables in the literature, a series of interviews was conducted with experts in the field. The key factors identified by the selected professional were 40. Many of the experts reported that barriers to the development of the construction industry included lack of materials, lack of plant and equipment as well as financial constraints among, others. In order to achieve parsimony and reduce the data sets to a manageable size, a combinatorial approach of factor analysis and principal component analysis was embraced. The 40 variables were operationalized into questions in a questionnaire, for scoring by respondents on a scale of 1 to 5 for current strength and future importance.

The variables were classed as interval or ratio scale data values and the relationship with the 40 variables tested using Pearson's Product Moment Correlation Coefficient. The variables are classed as categorical or ordinal, the one-way Analysis of Variance (ANOVA) was used to compare the means of the variables, together with Levene's Test of Homogeneity.

An initial capture of factors was made for each data set, STRENGTH and IMPORTANCE, using a Principal Component Analysis approach. Thereafter, the original "unrelated" solution was refined through a series of rotations using both orthogonal and oblique options. The 10 factors extracted with Eigen values of 1 or above, accounting for nearly 68% of the total variance, slightly less than the previous model. With a cut-off of  $\pm 0.5$  loading of the variables on the factors, each of the variables weighed heavily on only one of the factors, giving clarity to the model for the purposes of interpretation.

The final solution selected for the IMPORTANCE factors (the CURRENT STRENGTH factors are not reported here) was a Varimax rotation producing 10 factors and these are reported as follows as abstracted from the rotated component matrix.

**HYPOTHESIS TESTING**

H<sub>0</sub>: Development in Nigerian Construction Industry is not a function of Management Skills, Availability of Construction Materials and Conducive Environment

H<sub>1</sub>: Development in Nigerian Construction Industry is a function of Management Skills, Availability of Construction Material and Conducive Environment

Using a Regression Analysis with  $Y = a + b_1X_1 + b_2X_2 + e$

Where: Y = Development in Construction industry  
 a = Slope/Gradient  
 b = Intercept of the relation  
 X<sub>1</sub> = Management Skills  
 X<sub>2</sub> = Availability of Construction Material  
 X<sub>3</sub> = Conducive Environment  
 e = the Error Term or Residual

**Table 1:** Analysis of Variance (ANOVA)

Model	Sum of Squares	of Degree of Freedom	Mean Square	Snedecor F	Significance
<b>Regressi</b>	6.359	3	2.120	1.93	.124
<b>Residual</b>	379.858	346	1.098		
<b>Total</b>	386.217	349			

a. Predictors: (Constant), Management Skills, Availability of Construction Material,

Conducive Environment

b. Dependent Variable: Development in Construction Industry

Using Table 1, since the table value of 1.47 at 95% confidence level, two-tailed, is greater than the calculated value of 0.193, hence we reject the Null Hypothesis,  $H_0$  and accept the Alternative Hypothesis,  $H_j$  which states that Development in Construction Industry is a function of Management Skills, Availability of Construction Materials and Conducive Environment.

### **THE STUDY AREA: OYO STATE, NIGERIA**

Oyo State, located in South-Western Nigeria is one of the 36 states that make up the country with the Federal Capital Territory, Abuja. She was created on February 3, 1976, then with Osun that was carved out in 1991. Oyo state with the capital located in Ibadan, with a total population of 15 million inhabitants (2017 estimate) covers a land area measuring 28,245.264 km<sup>2</sup> and stands on longitude 4.00° E and latitude 8.00° N. She is bounded in the north by Kwara State, in the east by Osun State, in the south by Ogun State and in the west partly by Ogun State and partly by the Republic of Benin. Nigeria with a total land area of 923,768 km<sup>2</sup> has a population of 182 million inhabitants (2017 estimate). Oyo State can be regarded as having 8.242 % of Nigeria's total population, and 3.06 % of her land area.

### **DISCUSSIONS**

#### **Age of the Respondents**

**Table 1: Age of the Respondents**

Age	Frequency	Per cent
18-25years	17	8.7
26 - 35years	53	27.2
36-45years	73	37.4
above 45years	52	26.7
<b>Total</b>	<b>195</b>	<b>100.0</b>

**Source:** Authors 'Fieldwork, 2017.

#### **Mode of Materials' Purchase**

76% of the respondents opined that they procure their materials themselves while only 24% allow others to procure materials for them. The implication is that majority of professionals interviewed preferred to purchase materials

by themselves in order to ensure quality control and quality assurance of materials as well as having confidence in the materials and job done.

**Solving the Difficulty Aspect**

Responding to question on how to solve difficulty aspects on site; Figure 4 shows that 23 % of respondents referred to the drawings, while 37 % of the contractors interviewed called the attention of the architect or engineer in charge and 39 % called the site supervisor to solve the problem. It can be deduced that in case of problems on site, all the artisans interviewed called on the appropriate person to solve the difficulty aspects on site.

**Perceived Seasonal Problems**

On the case of perceived seasonal problems at construction sites, 64% of the respondents opined that scarcity of water supply was the main problem confronting effective construction work especially during the dry season; while 26% of respondents said bad roads were the major problems facing the construction work. 10 % wants to allude the slow pace of work to a particular season trying to rationalise with extreme dryness and dehydration that leads to tiredness and being easily fatigued. This makes it necessary for construction personnel/contractor to prepare different packages of work for different seasons in accordance with the situation.

Table 2: Feasible factors in Construction Industries in Nigeria

S/No	VARIABLES	COMPONENTS					
		1	2	3	4	5	6
1	Availability of Management Skills	0.763					
2	Long-term Projection/Risk Management	0.726					
3	Investor Confidence in Political Environment Stability	0.719					
4	Effective Co-ordination	0.662					
5	Availability of Information	0.626					
6	Flexibility of Government attitudes on Contract Conditions	0.602					
7	Research and Development	0.584					
8	Performance Measurement of the Industry	0.568					
9	Government's Understanding of the Construction Industry	0.573					

10	Availability of Electrical Power	0.942						
11	Availability of Plant/Machinery		0.872					
12	Flexible Aid Agency Procedures		0.595					
13	Professional Associations		0.874					
14	Efficient Behaviour of Construction Industry Personnel		0.743					
15	Availability of Telecommunications Infrastructure		0.897					
16	Ethical Behaviour			0.675				
17	Communication between Government and Contractors			0.593				
18	Attention to Best Practices			0.682				
19	Use of Partnering			0.581				
20	Attention to Organisation Culture			0.571				
21	Availability of Craft and Operative Skills				0.531			
22	Availability of Finance				0.61			
23	Availability of Investment Opportunities				0.58			
24	Confidence in Indigenous Skills				0.42			
25	Availability of Technical Knowledge				0.6			
26	Training and Education				0.74			
27	Prefabrication and Standardized Production				0.62			
28	Use of Benchmarking					0.52		
29	Attention to Supply-Chain Management					0.56		
30	Use of Construction IT					0.58		
31	Appropriate Production Technology					0.57		
32	Use of Computing Skills					0.61		
33	Encouragement for Contractor's Self-Development					0.62		
34	Availability of Conducive Environment						0.813	
35	Quality Management Orientation						0.743	
36	Non-faulty Systems						0.624	
37	Zero Defects						0.513	
38	Meeting Customer Needs						0.461	
39	Conformance to Requirements						0.433	
40	Sustainability						0.416	
	Eigen value	13.135	3.037	2.106	1.594	1.402	1.1230	
	Percentage of Variance/Eigen Vector	39.9	9.34	6.4	4.86	4.25	3.49	

### Rotated Factors in Construction Industry in Nigeria

The final solution selected for the IMPORTANCE factors (the CURRENT STRENGTH factors are not reported here) was a Varimax rotation producing 6



factors and these are reported as follow as abstracted from the rotated component matrix.

This factor grouping comprises a variety of variables, all of which are concerned with the long-term thinking needed for the industry's future. Investors in the industry need to have confidence that their yield of investment is commensurate with the risk of political stability. Such confidence can only be provided when information is freely available about matters which affect the business environment as well as specific projects. Construction projects can be huge in relation to individual firms' financial resources, and investors need to be sure that their investments have a long-term future. Hong Kong has a number of examples of large infrastructure projects which illustrate this point, including the airport, container port developments as well as connecting highways and railway construction. Governments, in their roles as major clients, often have large stakes in the infrastructure development, and their control of contract conditions may have adverse effects on investor sentiments if the risk placed on contracting parties is unusually high. It is important for government to have a good understanding of the way the industry thinks and responds to policies planned and implemented.

**Table 3:** Feasible Key Factors in Construction Industry in Nigeria

S/	Key Factors	Strongl	Agree	Strongly	Disagree	Undecide
1	Long-term	73	12	05	06	04
2	Financial and	69	15	05	04	07
3	Management	7^	10	07	08	03
4	Investors'	67	13	05	05	10
5	Flexibility	62	12	08	09	09
6	Research	71	14	04	07	04
7	Developmen Availability	91	02	03	03	01
8	Thinking the	15	68	05	07	05
9	Learning	IS	64	04	07	07
10	Techniques	67	16	10	03	07

**Source:** Author's Fieldwork, 2017

## **CONCLUSION**

This empirical study has identified ten key factors that can be annexed for the future development of the Construction Industry in Nigeria: long-term vision and policy for the industry, basic resources and infrastructure, a best practice culture, financial and human resources, updated techniques •supporting high production performance and a good leaning culture among others. It is optimistic that if these factors are explored and- adequately utilised, the nation shall prosper and attain speedy growth of the Construction Industry.

## **RECOMMENDATIONS**

The developed countries have risen above the anomalies bedevilling Nigerian Construction Industry by entrenching into their national constitutions policies that have ensured and sustained the growth and development of their Construction Industry as to result into exportation of their services outside the shores of their home base where they are given priority over the indigenous industry. To attain such heights in the Construction Industry in .Nigeria in the face of economic recession and to take services of our own experts to the next level both home and abroad, based on the findings of this study, the following

recommendations are put forward:

- i. **Conducive Learning Environment:** Creating conducive learning environment for students in Engineering and Environmental Studies so that they can be dedicated to and concentrated on their studies and ensure job opportunities for them after the programme by attaching outstanding students to construction companies. This will help in contributing their own quotas to the development in construction industries, instead of deviating from the professions.
- ii. **Quality Control:** Government and professional bodies in the industry should ensure that quality materials are being used in all construction sites and there should be monitoring teams constituted by stakeholders at all levels tokwersee the materials being used in accordance with Structural Engineers directives and Standards Organization of Nigeria.
- iii. **Keeping to Construction Regulations:** Government and professional bodies should work hand-in-hand to ensure that planning

regulations, building codes and engineers' specifications are strictly adhered to in any physical development and construction.

- iv. Avoidance of Shoddy Jobs: Stakeholders in the industry should ensure that standard jobs are always done in the sites, regardless of purpose or client. Any artisan, contractor, professional or individual, responsible for building collapse or found Wanting as far as shoddy jobs are concerned should face the wrath of the law. Only registered and experienced contractors should be awarded the contract of construction, in the course of selecting the main contractor for particular projects.

## REFERENCES

- A. Bamisile(2003): "Lack of Artisans, Craftsman Worries, Builders, Daily Trust, Available at <http://www.mtrustonline.com/dailytrust/builders10092003.htm> (accessed 21<sup>st</sup> July, 2015)
- A.O. Dada(1984): "An evaluation of Technical Manpower at Craft, Supervisory and Managerial levels in some selected Construction firms in Nigeria, M.Sc.Thesis, University of Ife, Nigeria.
- Construction Industry Institute(1989): "Cost of Quality Deviations in Design and Construction", Publication 10-1, CII, Austin,Texas.
- D. Arditi and H.M. Gunaydin(1997): "Total quality management in the construction process" *International Journal of Project Management*. 15(4), pp. 235–243.
- F. Harris and R. McCaffer(1993): *Modern Construction Management*, BSP Professional Books, Oxford, UK,.
- Ibironke, Olufuyi (2012): National Economic Development Office, Achieving Quality on Building Sites, NEDO, London.
- I. Ferguson and E. Mitchell(1989): "Quality on Site", B.T. Batsford Ltd, London.
- K.E. Fletcher and C.R. Scivyer(1988): *Quality assurance in UK building industry: Its current status and future possibilities*, CIB W/65, Organization and Management Construction Proceedings, Vol. 1, E & Spon, London, UK, pp. 367–374.
- L. Oyedele, B. Jaiyeoba, and M. Fadeyi(2013):"Design factors influencing quality of building projects in Nigeria", *International Journal of Sustainable Building Technology and Urban Development*, Library Services, University of the West of England
- O. Adams(1997): "Contractor Development in Nigeria: Perceptions of Contractors and Professionals, *Journal of Construction and Management Economics*.15(1), pp. 95–108.
- Tanbosi, Olufuyi(2009): *Griffith, Quality Assurance in Buildings*, Macmillan Education Ltd, Basingstoke, UK.