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Factors Impeding the Performance of Nigerian Construction Organizations

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The construction organization is considered as a significant frontier for socio-economic development of any country. Yet, the Nigerian construction firms are confronted by numerous challenges which reduce its efficiency and growth prospects. Hence, this study aims to examine the factors impeding the performance of construction organizations in Nigeria. The objectives of this study includes; to identify the factors impeding the performance of construction organization and to determine the most significance factors based on construction professionals' perspectives. Data for this study was collected through self-administered questionnaires on a stratified random sample, cutting across four major construction professionals. 100 valid questionnaires were returned and analyzed using Relative Importance Index (RII) for ranking comparison among the professionals on the scale range from 1-5 for rating their responses. Percentage Rank Agreement Factor (PRAF) was used to measure agreement of the importance ranking among construction professionals. The results of RII shows that poor cash inflows was ranked most significant factors by quantity surveyors, engineers, architects and builders. Shortage of skilled workers in specific skills was ranked first by architects and builders, second by quantity surveyors and engineers. PRAF revealed that poor cash inflow, shortage of skilled workers in specific skills, poor mode of payment for completed works, poor quality of workmanship and low remuneration of construction workers are the five most significance factors impeding the performance of Nigerian construction industry. The findings focused to assist construction stakeholders on the performance challenges that begets the construction organization for improve project delivery.

Keywords: Construction organization, Socio-economic development, Performance, Growth prospects, Project delivery.

Introduction

The performance of construction organization constitutes an effective and efficient project delivery which has a positive impact on all other industries as well as on the national economy. The construction organization in particular has been identified to be one of the key sectors for the economy which possess the potential of stimulating economic growth and development (Mudi *et al.*, 2015; Olesya, 2016). This is following its contribution to generating revenue, formation of fixed capital and employment creation, which ultimately support the Gross Domestic Product (GDP) of any nation (Raza *et al.*, 2014). Construction organization thus has a great influence on socio-economic development for industrial growth and production of basic amenities which is necessary to develop and improve living standard of a nation (Srinivasu & Rao, 2013; Anil *et al.*, 2014). Thus, in Nigeria, construction organization takes the largest part of government spending on infrastructural projects from 2010 to 2017, which was estimated to result in construction demand worth over US$900 billion (National Bureau of Statistics, [NBS] 2017).

Consequently, the National Planning Commission; [NPC] report (2017) showed that the construction sector's growth rate

leaped from 15.86% in 2014 to 15.96% and 15.88% in 2015 and 2016 respectively. The organization's contribution to overall GDP dipped to 3.84% in 2015 and 3.32% in 2016 from 3.91% achieved in 2014.

However, despite that the growth rate of infrastructural developments in Nigeria have been remarkable, the expectation of high performance remains a daunting prospect as a result of many challenges militating against its growth and development. Hence, there is need for extensive studies to be conducted on the factors impeding the performance of construction industry in Nigeria, which has one of the largest construction organizations in Africa both in terms of volume and projects cost. In doing so, this study is guided by the following objectives; to identify the factors impeding the performance of Nigerian construction industry, and to determine the most significance factors based on construction industry professionals perspective.

Factors impeding the Performance of construction industry

A research work of Bilau *et al.* (2015) recognized that low productivity of small and medium construction organization in Nigeria is linked to shortage of skilled workers. Windapo (2016) affirmed that due to inadequate education and training facilities, constructors show little attention in human resource development, and relied mainly on labour subcontractors to provide the required manpower. In most developing countries, self-employment of construction workers has led to fragmentation of various trades which contributed to the use of unskilled workers (Bilau *et al.,* 2015). They emphasized that unskilled workers produces poor quality of workmanship which results to material wastages and high cost of maintenance for remedial work.

As reported by Mbamali and Okotie (2012) and Mudi *et al.* (2015) that absence of material development programmes causes wastages of material in Nigeria. Helen *et al.* (2015) emphasized that local materials are easy to handle, thus curb material wastages on construction projects. Ofori, (2014) argued that in most developing countries, local construction materials remain little used due to the apathy of clients and end users. While Aniekwu *et al.* (2015) affirmed that production of local materials faces problems of inadequate research and development, low private investment, poor quality of products, and relatively high cost of materials produced. Moreover, Ofori (2014) emphasized that the level of technological development in Nigerian construction organization is low due to foreign exchange difficulties which hinders equipment and spares importations. Similarly, in India, the construction industry lack modern management techniques due to weaknesses in equipment procurement (Anil *et al.,* 2014).

Besides, financial problems in Nigerian construction organization often results to delay and cost overruns on construction projects (Okoye, 2016). This was also reported by Abu Bakar *et al.,* (2012) that Malaysian construction industry faces project delay, resulting in high cost overrun and loss of estimated revenue. Though Ika (2012) reported that financial problems generally influenced the capital base of an organization through delay of payment for completed works by clients; materials prices which often fluctuate, and high interest rates charged on loans. Olatunji *et al.* (2016) pointed out that financial bodies are unwilling to support construction organization because the organization is considered a risk business, and which makes material supply on trade credit common. Furthermore, in most developing countries, the construction industry rely on government projects, which are instable and hampered by delays in budgetary approval and disbursement of funds (Aniekwu *et al.*, 2015).

The instability in overall level of construction activity in developing countries has been considered a major marketing problem in the industry (Windapo, 2016). During the bumper oil period, Nigeria enjoyed an influx of capital leading to a builder's market with abundant work for the construction organization (Olukayode *et al.* 2015). Moreover, in most developing

countries, the construction organization is dominated by foreign firms, which compete with local firms for productivity outputs (Ofori, 2012).

An adequate construction productivity output depends on the understanding of construction planners and accurate cost estimates (Alzahrani & Emsley, 2013). Construction planners in Nigeria often predicts the workforce output because of unsuccessful method of construction (Ofori, 2012). Again, as reported by Ofori (2012) that an ineffective method of construction lead to material wastages, which are evident in Nigeria construction organization. As well as, in Ghana, high cost of construction is linked to improper planning and material handling (Osei, 2013).

The complexity of planning and poor procurement arrangement is evident in Nigeria construction organization (Mbamali & Okotie, 2012; Waziri & Bala, 2014). Olatunji *et al.* (2016) affirmed that contract arrangement and project performance are closely linked, which result to delay, cost overruns, poor work quality, and low level of productivity.

The studies have identified twenty-five factors impeding the performance of construction organizations. However, the researches were not exclusively focusing on the factors impeding performance of construction industry. Regardless, the researches have made a contribution in identifying the factors impeding the performance of construction industry. This was justified based from the empirical data that was gathered from the researches. In this regard, it implies that these findings have become the basis which the performance of construction industry was assessed in this study.

Research methodology

The questionnaire

A preliminary pilot study was first carried out on a small respondents to ensure clarity and directness of the questions used in the questionnaire and also to determine the ease of completing the questionnaire. Four construction professionals having strong background of construction business participated in the pilot study. In addition to the professionals met, an academic participated to moderate the opinion rendered by the construction professionals. This is in line with Babbie (2011), to inaugurate agreement on the most useful meaning and measurement of the concept that is to be used in the research. The respondents suggested few changes to the questionnaire regarding the wordings of the questions. The questionnaire was then modified based on the professionals' feedback, before it was finally used at the data collection stage.

The questionnaire consist of two sections. Section A consist of respondents personal particulars such as; membership of professional bodies, years of experience, academic qualification, numbers of projects executed and regular client type. In section B, each respondent was asked to rate the factors impeding the performance Nigerian construction organization on a five-point Likert scale ranging from 1 to 5, where 1 represents "Insignificance" and 5 represent "Very significance".

Sample structures

A sample of 200 experienced professionals within F.C.T, Abuja were targeted in the survey, comprising 50 each of quantity surveyors, engineers, architects and builders randomly drawn from NIQS, NSE, NIA and NIOB. Though, there are several methods of administering a questionnaire survey, direct delivery of the questionnaire by hand was preferred using the members' directory. **Table 1** shows the summary of the sample responses of the questionnaire survey. From table 1, the response rates were 30(60%), 26(52%), 20(40%) and 24(48%) for quantity surveyors, engineers, architects and builders respectively. This was considered adequate for analysis based on assertion by Spillane *et al.* (2012) that the result of a survey could be considered as biased and of little importance if the return rate was lower than 30% - 40%.

Table 1. Sample responses of the questionnaire survey

Professionals	Number distributed	Number of responses	Percentage returned
1. Quantity surveyors	50	30	60%
2. Engineers	50	26	52%
3. Architects	50	20	40%
4. Builders	50	24	48%
Total	**200**	**100**	

Data analysis and discussion

The data was analyzed using the following methods;

Relative Importance Index (RII)

The performance of each parameter was evaluated based on the importance weighting and the proposed efficiency of each variable. From the responses on the factors impeding the performance of Nigerian construction organization, relative importance index was calculated using the following formula;

$$\text{Relative importance index} = \frac{5n_1 + 4n_2 + 3n_3 + 2n_4 + n_5}{5(n_1 + n_2 + n_3 + n_4 + n_5)}$$

Where n_1 represents the number of respondents who answered 'very significance', n_2 represents the number of respondents who answered 'significance', n_3 represents the number of respondents who answered 'moderately significance', n_4 represents the number of respondents who answered 'less significance', n_5 represents the number of respondents who answered 'insignificance'.

The results of the relative importance index from Table 2 shows that poor cash inflows were ranked most significant factors by quantity surveyors, engineers, architects and builders. This confirmed the perceived causes of project abandonment in Nigeria. Shortage of skilled workers in specific skills was ranked first by architects and builders, second by quantity surveyors and engineers. This affirmed the alleged low productivity of Nigerian construction organization. Poor mode of payment for completed works was also ranked first by builders, third by quantity surveyors and architects, and fourth by engineers. Low remuneration of construction workers was also ranked first by builders, third by architects, eight by quantity surveyors, and fifteenth by engineers. Poor quality of workmanship was ranked third by quantity surveyors and engineers, seventh by architects, and tenth by builders. Variation of construction materials prices was ranked fifth by quantity surveyors, architects and builders, and twelfth by engineers.

Rank Agreement Factor (RAF) and Percentage Rank Agreement Factor (PRAF)

To have a general agreement in the ranking of all the factors, Rank Agreement Factor (RAF) and PRAF was used to quantitatively measure the agreement in the importance ranking among the quantity surveyors, engineers, architects and builders. This is in line with the suggestion by Chan and Kumaraswamy (2002).

$$RAF = \frac{\text{ƐQEAB}}{N}$$

$$PRAF = \frac{RAF_{max} - RAFj}{RAF_{max}} \times 100\%$$

Where RAF_{max} = maximum RAF, N = total number of factors, and ƐQEAB = sum of the order of ranking by quantity surveyors, engineers, architects and builders. The RAF can be >1, with a higher factor implying greater disagreement while a RAF zero implies perfect agreement (Chan & Kumaraswamy, 2002). The results of RAF is shown in the seventh column of Table 3. For 25 factors impeding the performance of Nigerian construction organization, RAF_{max} is 3.88.

From the results of the PRAF in Table 3, the five most important factors are poor cash inflow, shortage of skilled workers in specific skills, poor mode of payment for completed works, poor quality of workmanship and low remuneration of construction workers.

The result shows poor cash inflow as an important factors impeding the performance

of Nigerian construction organization. This is in agreement with Tijani & Ajagbe, (2016) who affirmed that poor cash inflow results to delay in project delivery which leads to abandonment of construction projects.

Table 2: Relative importance index of construction professionals' responses

	Q/S			ENGR			ARCH			BLDER		
Factors	**S**	**RII**	**R**	**S**	**RII**	**R**	**S**	**RII**	**R**	**S**	**RII**	**R**
1. Shortage of skilled workers in specific skills	81	0.540	2	83	0.639	2	85	0.850	1	82	0.683	1
2. Poor quality of workmanship	79	0.526	3	81	0.623	3	78	0.780	7	76	0.633	10
3. Poor communication among participants	77	0.513	5	78	0.600	5	78	0.780	7	71	0.592	16
4. Variation of construction material prices	77	0.513	5	72	0.554	12	80	0.800	5	80	0.667	5
5. low remuneration of construction workers	76	0.507	8	69	0.531	15	83	0.830	3	82	0.683	1
6. Absence of local materials	73	0.487	15	65	0.500	23	70	0.700	17	69	0.575	17
7. High cost of materials and machinery	73	0.487	15	68	0.523	18	80	0.800	5	75	0.625	12
8. Low level of technological advancement	77	0.513	5	77	0.592	6	78	0.780	7	74	0.617	14
9. Lack of R & D facilities and programmes	76	0.507	8	55	0.423	25	65	0.650	23	67	0.558	20
10. Poor cash inflow	82	0.547	1	85	0.654	1	85	0.850	1	82	0.683	1
11. Poor mode of payment for completed works	79	0.526	3	80	0.615	4	83	0.830	3	82	0.683	1
12. High interest rate charged by banks on loans	70	0.467	19	66	0.508	21	70	0.700	17	67	0.558	20
13. Poor financial control on site	75	0.500	10	77	0.592	6	75	0.750	11	80	0.667	5
14. Wrong method of estimating	70	0.467	19	75	0.577	8	73	0.730	12	69	0.575	17
15. Lack of capital & delay of budgetary allocation	71	0.473	18	73	0.562	10	73	0.730	12	68	0.567	19
16. Unstable nature of construction works	74	0.493	12	72	0.554	12	70	0.700	17	62	0.517	22
17. Foreign firms domination	64	0.427	25	57	0.439	24	60	0.600	24	55	0.458	24
18. Frequency of design changes due to improper planning	69	0.460	21	73	0.562	10	68	0.680	20	75	0.625	12
19. Lengthy time of design & tendering procedures	68	0.453	22	68	0.523	18	68	0.680	20	58	0.483	23
20. Inadequate material management on site	74	0.493	12	68	0.523	18	67	0.670	22	76	0.633	10
21. Poor record of construction cost data	73	0.487	15	74	0.569	9	65	0.650	23	58	0.483	23
22. Ineffective method of construction	66	0.440	24	71	0.546	14	78	0.780	7	78	0.650	7
23. Corruptions	68	0.453	22	69	0.531	15	73	0.730	12	72	0.600	15
24. Absence of government policies for construction	75	0.500	10	66	0.508	21	73	0.730	12	78	0.650	7
25. Poor contractual procedures	74	0.493	12	69	0.531	15	73	0.730	12	78	0.650	7

****S: Sum of responses; RII: Relative Importance Index; R: Ranking**

Shortage of skilled workers in specific skills is indicated as an important factor impeding the performance of construction industry. Earlier studies (Ofori, 2012) had identified the problem of low productivity in developing countries which is linked to shortage of skilled workers. Bilau *et al.* (2015) supported that Nigeria is in dire need of skilled workers to curb the challenges of productivity in construction organizations.

Poor mode of payment for completed works was revealed as the third most important factor, which agrees with the contention of Ayodele & Alabi (2011); Helen *et al.* (2015) that poor mode of payment for completed works can severely limit the scope of an organizations' construction activities as it has a great influence on the capital base of an organization.

Poor quality of workmanship is also one of the most important factors impeding the performance of construction industry. This is in agreement with Olukayode *et al.* (2015) who affirmed that poor quality workmanship results to high cost of maintenance due to defective work carried out by unskilled workers.

The result also show low remuneration of construction workers as an important factor impeding the performance of construction industry. Bilau *et al.* (2015) acknowledged that the issue of low remunerations prompt construction workers to pursue other career for better remuneration. In addition, workers potential is boundless but it requires motivation in order to excel (Ofori, 2012). Ironically, Windapo (2016) stressed that the majority of construction firms in developing countries do not motivate their workforce for an improve performance and productivity. Therefore, if the remuneration of construction workers is not enhanced, skilled workers shortage will be an acute problem.

Table 3: RAF and PRAF of all the professionals

Factors	QS	Eng	Arch	Bldr	Sum QEAB	RAF	PRAF	Ranking
1. Shortage of skilled workers in specific skills	2	2	1	1	6	0.24	93.82	2
2. Poor quality of workmanship	3	3	7	10	23	0.92	76.29	4
3. Poor communication among participants	5	5	7	16	33	1.32	65.98	9
4. Variation of construction material prices	5	12	5	5	27	1.08	72.17	5
5. Low remuneration of construction workers	8	15	3	1	27	1.08	72.17	5
6. Absence of local materials	15	23	17	17	72	2.88	25.77	21
7. High cost of materials and machinery	15	18	5	12	50	2.00	48.45	11
8. Low level of technological advancement	5	6	7	14	32	1.28	67.01	7
9. Lack of R & D facilities and programmes	8	25	23	20	76	3.04	21.65	22
10. Poor cash inflow	1	1	1	1	4	0.16	95.88	1
11. Poor mode of payment for completed works	3	4	3	1	11	0.44	88.66	3
12. High interest rate charged by banks on loans	19	21	17	20	77	3.08	20.62	23
13. Poor financial control on site	10	6	11	5	32	1.28	67.01	7
14. Wrong method of estimating	19	8	12	17	56	2.24	42.27	14
15. Lack of capital & delay of budgetary allocation	18	10	12	19	59	2.36	39.18	15
16. Unstable nature of construction works	12	12	17	22	63	2.52	35.05	17
17. Foreign firms domination	25	24	24	24	97	3.88	0.00	25
18. Frequency of design changes due to improper planning	21	10	20	12	63	2.52	35.05	17
19. Lengthy time of design & tendering procedures	22	18	20	23	83	3.32	14.43	24
20. Inadequate material management on site	12	18	22	10	62	2.48	36.08	16
21. Poor record of construction cost data	15	9	23	23	70	2.80	27.84	20
22. Ineffective method of construction	24	14	7	7	52	2.08	46.39	13
23. Corruptions	22	15	12	15	64	2.56	34.02	19
24. Absence of government policies for construction	10	21	12	7	50	2.00	48.45	11
25. Poor contractual procedures	12	15	12	7	46	1.84	52.58	10

***RAF: ranking agreement factor; PRAF: percentage ranking agreement factor.**

Conclusion

This study identifies that poor cash inflow, shortage of skilled workers in specific skills, poor mode of payment for completed works, poor quality of workmanship and low remuneration of construction workers are the five most significance factors impeding the performance of construction organization in Nigeria A close analysis of the results indicates that the most significance factors impeding the performance of Nigerian construction organization arise as a result of financial problems and underdevelopment of human resources. This confirms the perceived low performance of Nigerian construction organization. In view of the above, construction stakeholders should concentrate their efforts in mitigating the issues identified to achieve performance improvement for effective project delivery.

References

Abu Bakar, A. H.; Tabassi, A. A.; Razak, A. A.; & Yusof, M. N (2012). Key Factors Contributing to Growth of Construction Companies: A Malaysian Experience, *World Applied Sciences Journal,* 19(9), 1295-1304.

Alzahrani, J. I.; & Emsley, M. W. (2013). The Impact of Contractors' Attributes on Construction Project Success: A Post Construction Evaluation, *International Journal of Project Management,* 31(2). 313-322

Aniekwu, N. A. C.; Igboanugo, A. C. I.; & Onifade, M. K. (2015). Critical Issues in Reforming the Nigerian Construction Industry, *British Journal of Applied Science and Technology,* 5(3), 321-332.

Anil, S.; Raghav, A.; & Virendra, K. P. (2014). Grand Challenges for the Indian Construction Industry, *Built Environment Project and Asset Management,* 4(4), 317-334. https://doi.org/10.1108/BEPAM-10-2014-0055

Ayodele, E.O.; & Alabi, O.M. (2011). Abandonment of Construction Projects in Nigeria: Causes and Effects; Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 2(2): 142-145.

Babbie, E. R. (2011). The basics of social research (5th Ed.). California: Wadsworth Cengage Learning.

Bilau, A. A.; Ajagbe, M. A.; Kigbu, H. H.; & Sholanke, A. B. (2015). Review of Shortages of Skilled Craftsmen in Small and Medium Construction Firms in Nigeria, *Journal of Environment and Earth Science,* 5(15), 98-110.

Chan, W. M.; & Kumaraswamy, M. (2002). Compressing Construction Durations: Lessons Learned from Hong Kong Building Projects, *International Journals of Project Management*, 20(1), 23-35.

Helen, B. I.; Emmanuel, O. O.; Lawal, A.; & Elkanah, A. (2015). Factors Affecting the Performance of Construction Projects in Akure, Nigeria, International Journal of Civil Engineering, Construction & Estate Management, 3(4), 57-67.

Ika, L. A. (2012). Project Management for Development in Africa: Why Projects are Failing & What can be Done About it, *Project Management Journal,* 43(4), 27-41. http://dx.doi.org/10.1002/pmj.21281

Mbamali, I.; & Okotie, A. J. (2012). An Assessment of the Threats and Opportunities of Globalization on Building Practice in Nigeria. *American International Journal of Contemporary Research*, 2(4):143–150.

Mudi, A.; Bioku, J. O.; & Kolawole, O. B (2015). Assessing the Characteristics of Nigeria Construction Industry in Infrastructure Development, *International Journal of Engineering Research & Technology,* 4(11), 546-555.

National Bureau of Statistics, (NBS). Nigerian Construction Sector. Summary Report: 2014-2017; Available: www.nigeranstat.gov.ng (Retrieved August, 2018).

NPC, (2017). The Nigerian Economy: Annual Performance Report. The Presidency, National Planning Commission Report. Abuja.

Ofori, G. (2012). Transparency in Construction. *In:* Ofori, G. (ed.)

Contemporary Issues in Construction in Developing Countries. Abingdon, Oxon, UK: Spon Press.

Ofori, G. (2014). Nature of the Construction Industry, its Needs and its Development: A Review of Four Decades of Research, *Proceedings of the CIBW107 International conference,* 28th-30th January, 10-19, Lagos, Nigeria.

Okoye, P. U. (2016). Optimizing the Capacity of Nigeria Construction Sector for Socio-Economic Sustainability. *British Journal of Applied Science & Technology*. 16(6), 1-16.

Olatunji, S. O.; Oke, A. E.; Aghimien, D. O.; & Adeyemi, S. S. (2016). Effect of Construction Project Performance on Economic Development of Nigerian. *Journal of Economics and Sustainable Development,* 7(12), 142-149.

Olesya, A. S.; Nadezhda, V. M.; Innava, R. L.; & Elena, V. P. (2016). Peculiarities of Formation of Socially Oriented Strategy of Economic Growth of National Economy. *European Research Studies,* 24(2), 161-170.

Olukayode, O. F.; Mathew, F. A.; & Taiwo, A. A. (2015). An Assessment of Major Factors Affecting Construction Project Cost in Nigeria. *International Journal of Sciences: Basic & Applied Research (IJSBAR),* 24(4), 308-318.

Osei, V. (2013). The Construction Industry and its Linkages to the Ghanaian Economy-Polices to Improve the Sector's Performance. International Journal of Development and Economic Sustainability. Published by European Centre for Research Training and Development UK. (1), 56-72. Available: www.ea-journals.org (Retrieved January, 2018).

Raza, A. K.; Mohd, S. L.; & Zulkipli, B. G. (2014). Malaysian Construction Sector and Malaysia Vision 2020: Developed Nation Status, Procedia-Social & Behavioral Sciences, 109, 507-513.

Spillane, J. P.; Oyedele, L. O.; & Meding, J. V. (2012). Confined Site Construction, *Journal Eng. Design Technology*, 10(3), 397–420.

Srinivasu, B.; & Rao, P. S. (2013). Infrastructure Development and Economic Growth: Prospects and Perspective, Journal of Business Management and Social Sciences Research, 2(1), 81-91.

Tijani, M. A.; & Ajagbe, W. O. (2016). Professional Views on the Causes and Effects of Construction Projects Abandonment in Ibadan Metropolis, Nigeria, Ethiopian Journal of Environmental Studies and Management, 9(5), 593-603.

Waziri, B. S.; & Bala, K. (2014). Actualizing Nigeria's Vision 20: 2020: Imperatives of the Construction Sector. *Civil and Environmental Research*, 6(6), 69-75.

Windapo, A. O (2016). Skilled Labour Supply in the South African Construction Industry: The Nexus between Certification, Quality of Work Output and Shortages, *SA Journal of Human Resources Management,* 14(1), 1-8.