



Positioning the Nigerian Construction Industry and Desiderata for Global Competitiveness in the 21st Century

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Authors' contributions

This work was carried out in collaboration among all authors. Author KCO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors FOE and DOF managed the analyses of the study. Author FOE managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The research evaluates the drivers toward positioning Nigerian construction industry for global competitiveness in the 21st century. Being a survey research, questionnaires containing information relating to issues and drivers on global competitiveness were administered to selected construction practitioners in Anambra State, Nigeria. Accordingly, a total of 84 questionnaires were administered out of which 80 copies were completed, returned and found useful. This corresponds to a response rate of 95%. Data collected were analyzed and presented using mean score, percentages, relative importance index (RII) and tables. The study found that the identified twelve (12) drivers of global competitiveness were all significant in the study area. However, the most perceived significant drivers for global competitiveness in the study area is labour market efficiency. Also, the study observed that the Nigerian construction industry operates at the level of factor-driven economy. Therefore, the study concluded by recommending that construction firms

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must find appropriate strategies that would help to improve and strengthen their digital innovation, institutional, technological and infrastructural needs. This will place them in good standing for global competitiveness in the future.

Keywords: Global competitiveness; economy; Nigerian construction industry; professionals; Anambra.

1. INTRODUCTION

Construction industry in both developed and developing countries is an important contributor and/or a critical component to economic growth and development. Construction industry according to [1] may be viewed as that sector of the economy which, through planning, design, construction, maintenance/repair and operation, transforms various resources into constructed facilities. Put differently, it is a sector of the economy that transforms various resources into constructed physical, economic and social infrastructure necessary for socio-economic development [2,3]. The industry contributes significantly to the Gross Domestic Product (GDP) of any nation. In Nigeria for instance, [4] stated that the industry contributed about 3.99% to the nominal GDP in the first quarter of the year, 2016. Also, around the world, the industry has fared well both in job creation and economic development of nations. Furthermore, it serves as a litmus paper for testing the economy of any nation. That is, upsurge in construction most times depict economic growth and vice versa when construction work dwindles. Consequently, it serves as a tool used by the government for regulating the economy. In Nigeria, the construction industry has achieved a great feat in labour creation, increase in GDP and other ripple effects that emanates from setting up a construction site in a particular location. For instance, construction materials vendors, drivers, local food sellers all benefit from construction activities. Also, [5] opined that most efforts aimed at transforming the power, transport, housing and industrial sectors in Nigeria are not likely to bear the desired fruits without the active participation of the construction industry professionals.

Globally, the more competitive an economy tends to be; the higher the levels of income of its citizens. However, today's difficult economic environment underscores the importance of not losing sight of long-term competitiveness fundamentals amid short-term urgencies [6]. Competitive economies according to [6] are those that have in place factors driving the productivity enhancements on which their present and future prosperity is built. Competitive

economy helps national economies to wither business cycle downturns and ensure that the mechanisms that could enable better economic performance in the future are in place [6]. Despite this, most sectors of Nigeria economy including construction still operate at the local level, because, greater percentage of their turnovers are generated locally as against their counterpart in developed countries. Based on this, the global benchmarking network ranked Nigeria 115th out of 144 countries in its annual Global Competitiveness Reports [7]. In view of this, there is a need for all the sectors of Nigeria's economy and in particular, the construction sector to address these challenges which will put them in good standing for global competitiveness in the years ahead. Therefore, this research evaluates the drivers toward positioning the Nigerian construction industry for global competitiveness in this 21st century.

2. LITERATURE REVIEW

2.1 Construction Industry and Globalisation

Construction industry plays a central role in society in both emerging and mature economies. It creates jobs, accounts for 6% of global GDP, and builds the industrial and civil infrastructure that enables other businesses to thrive [8]. The evolutionary process of the construction industry and its role in national socio-economic development suggests that the share of construction in GDP tends to increase with the level of per capita income in the first stages of economic development [9]. Accordingly, [10-14] reports that the industry's contributions to GDP range from 7% to 10% in highly developed economies and 3% to 6% in underdeveloped countries. In Ghana, the industry's contributions to GDP in years 1993-2011 was 9.1% [15]; while it was 9.0% in the United States of America in 2006; and 8.7% in Malaysia in 2009/2010 [16]. In Europe, the construction sector is a key component of its economic growth, its employment sector and also responsible for 7% of the EU GDP [17]. Furthermore, the importance of the construction industry can be recognized in countries affected by natural hazards particularly

in areas of reconstruction of building and community service infrastructure which contribute to sustainable development and protect the natural and built environments [9,18, 19]. Also, in the developing countries, physical construction activities alone account for 2% to 6% of the employment demands and subsidiary activities provides an additional 2% to 4% employment demand while in the developed countries the figure rises to between 6% to 10% and 4% to 6% respectively [1]. In the European construction sector, for instance, over 11 million people were directly employed in the building sector, which makes it the single largest contributor to EU employment in the year 2011 [17].

Conversely, the concept of Globalisation is seen as a firm's or country's commitment to integrate and coordinate economic activities across national boundaries to enjoy economies of scale, cost and reputation; and thus, satisfy the needs of global customers better than the competition [7]. Globalization according to [20] is a process characterized by the liberalization of the economy of nations globally. Under this process, economic activities are free from institutional controls and this enhances free market mechanism, private enterprises, open competition, professionalism and excellence in corporate governance [20]. It involves the entire world, and not just a few countries and promotes specialization and application of the principle of comparative advantage on a global scale to further develop the entire world's resources [20, 21]. Furthermore, it breaks down all barriers, separating nations and continents and thereby making the world a global village [20].

Generally, [22] observed that globalization has changed the face of construction. For instance, the range of services offered by large construction firms has changed from concentrating on physical aspects of building, now they are obliged to offer an extended scope of activities including project financing solutions for their clients. Also, construction firms have diversified into forward integrated value-added activities (FIVAA), such as operating the facilities they build (e.g. BOT-projects). Further, some contractors have entered into client-related business, such as telecommunications. Generally speaking, more and more contractors generate increasing turnovers from providing additional services to their clients [22].

2.2 Essential Drivers/Requirements for Global Competitiveness

The term global competitiveness has been extensively discussed in recent times by academic communities ever since it has become a focus of debate among policy-makers [23,24]. Academic discussion on this gave rise to many definitions of global competitiveness. However, [25] categorised these various definitions of competitiveness into two (2):

- i. The cost-/market share-view of competitiveness; and
- ii. The productivity-based view of competitiveness

The first definition looks at competitiveness as a location's unit cost level, driving companies' ability to compete successfully on global markets; while the second definition looks at competitiveness as a location's productivity level, driving the standard of living the individuals in that location can sustain [25]. The motivation behind these definitions according to [25] are: The first definition is basically concerned about a location's 'external balance', i.e. its ability to sell its products and services, defend international market share, and thus generate the inflows needed to pay for imports. While the second definition is motivated by a concern about a location's inherent ability to create value based on the production factors it has at its disposal.

Similarly, identifying the underlying drivers for global competitiveness has been a key issue in global economic analysis recently. Previous studies have tried to identify a couple of drivers to this regard which have over the last decade led to a shift in paradigm from capital to knowledge to institutions as key drivers of global competitiveness [25]. Other drivers according to [25] are exports, investment rates, FDI inflows, R&D expenditure, and the like. In furtherance, [25] organize these factors into three blocks:

- i. Factors that have long been recognized as potentially important drivers of prosperity: Examples are: Rules and regulation, financial markets, physical infrastructure, macroeconomic policies, institutions and geography and Size of the economy;
- ii. Factors that have more recently come into focus or have been significantly re-evaluated: Example are: Company sophistication and firm heterogeneity, economic geography: Urbanization and

clusters; economic composition: 'Economic complexity' and more, (creative) skills and locational attractiveness, competitiveness at different levels of geography;

- iii. Factors that are being discussed but remain very difficult to convincingly operationalize: examples are individuals: Culture and trust, institutions: Quality and capacity and social capital and linkages.

Furthermore, [26] identified three basic forces that drive the progress of globalization as:

- i. First, are the advances in transportation and communication, which have reduced costs and increased the accessibility of formerly far-away places. Today, everything is broadcast, e-mailed, cabled or faxed to almost everywhere on this planet;
- ii. Second, tastes (including those of building design, urban design, construction materials and so on) have changed generally to favour taking advantages of the opportunities created by decrease in costs of transportation and communication;
- iii. Third, economic policies such as the emergence of the World Trade Organization (which prohibits government restrictions of free flow of goods across borders), currency devaluation, integration of markets and emergence of regional trading blocs such as ECOWAS, SADC, EU among others, have removed barriers and considerably influence the economic character and pace of the world.

To [6] the drivers to global competitiveness can be grouped into twelve (12) pillars:

- i. **Institution:** The institutional environment entails the legal and administrative framework of the economy within which individuals, firms, and governments interact to generate income and wealth [6]. The importance of a solid institutional environment has become even more apparent during the current economic crisis, given the increasingly direct role played by the state in the economy of many countries. Because, the quality of institutions has a strong bearing on competitiveness and growth of any nation [6]. Therefore, the lack of understanding of this role to the economy by successive governments among developing nations was responsible for their stunted growth in

terms of economic/global competitiveness [27]. Furthermore, [3,27] argue that successive governments in developing countries do not possess the roadmap that clearly defines the needs and demands of their populace as regards legal and administrative framework for effective transformation of their economy that may trigger global competitiveness. Also, most of the policies evolved by past administrations in developing countries lack sincerity of purpose and are merely for political aggrandizement [3,27].

- ii. **Infrastructure:** Extensive and efficient infrastructure is an essential driver of competitiveness [6]. For effective functioning of the economy, infrastructural facility is an important determinant; because, it defines the location of economic activity, kinds of activities or sectors that can develop in a particular economy. Well-developed infrastructure reduces the effect of distance between regions, with the result of truly integrating the national market and connecting it at low cost to markets in other countries and regions. Also, the quality and extensiveness of infrastructure networks significantly impact economic growth and reduce income inequalities and poverty in a variety of ways [6]. Thus, [28] opined that a well-developed infrastructure such as sets of technologies that enables digital work and interactions between companies and customers are required for global competitiveness. However, in Nigeria, [1,3] pointed out that the country is still confronted with a lot of infrastructural challenges such as dilapidated and chronically non-functional infrastructures. Also, the infrastructure deficit of Nigeria is estimated to be in the region of \$300 billion and about 120 million Nigerians lack access to electricity [7,29]. Consequently, this affects the economic/global competitiveness index of Nigeria negatively.

- iii. **Macroeconomic stability:** The stability of the macroeconomic environment is important for business and, therefore, is important for the overall competitiveness of a country [6]. Although it is certainly true that macroeconomic stability alone cannot increase the productivity of a nation, it is also recognized that macroeconomic disarray harms the economy [6]. In Nigeria, the macro-economic stability keeps fluctuating. The inflation was down to

single digit in the year 2013 - 2015 with 7.6%, 8.05% and 9.01% in 2013, 2014 and 2015 respectively [30,31]. However, the figure rose in 2016 to double-digit to date. Precisely from 2016 - 2020 the inflation rate has been between 11% - 16% [31]. Consequently, Nigeria's inflation rate has been higher than average for African and Sub-Saharan countries for years now and even exceeded 16% in 2017 – and a real, significant decrease is nowhere in sight [31]. Also, the interest rate is quite high and ranges between 12% - 13.5% with commercial banks' lending to private entrepreneurs for as much as 30 to 34% interest [30,32] - which makes it difficult for Nigerian firms and industries to compete globally.

- iv. **Health and primary education:** A healthy workforce are vital to a country's competitiveness and productivity [6]. Workers who are ill cannot function to their potential and will be less productive. Poor health leads to significant costs to business, as sick workers are often absent or operate at lower levels of efficiency [6]. Investment in the provision of health services is thus critical for clear economic, as well as moral, considerations. In addition to health, this pillar takes into account the quantity and quality of basic education received by the population, which is increasingly important in today's economy. Basic education increases the efficiency of each worker [7]. In health and education, according to [7] preventable public health diseases like malaria, typhoid, polio, cholera is still at epidemic proportions in Nigeria. Also, an estimated 56 million people in Nigeria are illiterates, i.e. cannot read or write in any language [7,33]. Consequently, this condition has continually affected the productivity of the labour force with the associated loss of man-hours in Nigeria.
- v. **Higher education and training:** Quality higher education and training is crucial for economies that want to move up the value chain beyond simple production processes and products. In particular, today's globalizing economy requires economies to nurture pools of well-educated workers who are able to adapt rapidly to their changing environment. This pillar measures secondary and tertiary enrollment rates as well as the quality of education as assessed by the business

community [6]. Enrollment rates and years of schooling have risen in most countries of the world and this can be attributed to successive generations of parental investment in children's education within the confines of a stable household structure. In 1960, the average schooling of men aged 25 and over in advanced countries was 5.8 times that of men in developing countries. In 2000, this ratio fell to 2.4. During the same period, women's average schooling level as a ratio of men increased from 0.5 to 0.7 in developing countries. However, in Nigeria, available evidence has shown that tertiary enrolment growth rates are quite inconsistent and sluggish. The profile of tertiary enrolment in Nigeria reveals that tertiary enrolment has relatively been increasing over the years [34]. Although, tertiary enrolment rate in Nigeria is quite improving in recent times; the quality of graduates has not attained the same feat. Hence, [7] opined that we produce poor quality unemployable graduates who can hardly practice their profession. Thus, there's a weak linkage between educational institutions and industry.

- vi. **Goods market efficiency:** Countries with efficient goods markets are well-positioned to produce the right mix of products and services given supply-and-demand conditions, as well as to ensure that these goods can be most effectively traded in the economy [6]. Healthy market competition, both domestic and foreign, is important in driving market efficiency and thus business productivity, by ensuring that the most efficient firms, producing goods demanded by the market, are those that thrive [6]. The best possible environment for the exchange of goods requires a minimum of impediments to business activity through government intervention.
- vii. **Labor market efficiency:** The efficiency and flexibility of the labor market are critical for ensuring that workers are allocated to their most efficient use in the economy and provided with incentives to give their best effort in their jobs. Labor markets must, therefore, have the flexibility to shift workers from one economic activity to another rapidly and at low cost, and to allow for wage fluctuations without much social disruption [6]. Also, in global competitiveness the most significant issue under labour market efficiency is aligning

and managing the right resources and teams to focus on global competitiveness services, adopting 'global competitiveness' mind-set, building enthusiasm and willingness among middle management and operational levels. Furthermore, searching for the right alliance partner, shortage of suitably trained professionals is core [35-40].

- viii. **Financial market sophistication:** The present economic crisis has highlighted the central role of a sound and well-functioning financial sector for economic activity [6]. An efficient financial sector allocates the resources saved by a nation's citizens as well as those entering the economy from abroad to their most productive uses. Hence, Nigeria being a developing country, her building practice is still grappling with a lot of inherent challenges, ranging from inadequate technical and managerial know-how to insufficient financial, material and equipment capital base [16].
- ix. **Technological readiness:** This pillar measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries [6]. In today's globalized world, technology has increasingly become an important element for firms to compete and prosper. In particular, information and communication technologies (ICT) have evolved into the "general-purpose technology of our time, given the critical spillovers to the other economic sectors and their role as efficient infrastructure for commercial transactions [6]. Similarly, ICT penetration in Nigeria is very low- in a world that is becoming increasingly knowledge-based. With poverty at 69.9% and unemployment at 25% (NBS, 2013), we lack the purchasing power that is required to effectively stimulate and drive the consumption of goods and services [7]. Also, [41] observed that appropriate infrastructure and technology augment the other drivers to digitalization and global competitiveness. However, the unavailability of these appropriate infrastructure and technology is the major impediment towards global competitiveness of developing countries [42,43].
- x. **Market size:** The size of the market affects productivity because large markets allow firms to exploit economies of scale. Traditionally, the markets available to firms have been constrained by national

borders. In the era of globalization, international markets have become a substitute for domestic markets, especially for small countries. There is vast empirical evidence showing that trade openness is positively associated with growth [6]. Furthermore, advancement in information and communication technology (ICT) is transforming the whole world into a global village where goods and services can be made available with minimum restrictions and delays [20] Thus, the proliferation of online business is gradually becoming commonplace, because the number of online customers is increasing tremendously [37]. For instance, in Nigeria, [40] projected that 38% of Nigerians have access to the internet with mobile telephone subscription rate of 78.8 per 100 people. Accordingly, 60 million Nigerians are internet users. Based on the average internet penetration rate of 14% as postulated by [40] for African countries, the number of internet users in Nigeria will increase overtime.

- xi. **Business sophistication:** Business sophistication is conducive to higher efficiency in the production of goods and services. This lead, in turn, to increased productivity, thus enhancing a nation's competitiveness. Business sophistication concerns the quality of a country's overall business networks as well as the quality of individual firms' operations and strategies [6] Hence, Organizations must provide up-to-date product information online and engage with online communities to provide advice on their products [37,39,40,44 -46].
- xii. **Innovation:** Innovation is particularly important for economies as they approach the frontiers of knowledge and as the possibility of integrating and adapting continues exogenous technologies tend to disappear [6]. In becoming a digital enterprise, the construction industry will be required to thoroughly reimagine the industry through a digital lens in terms of its processes and in customer engagement. Also, it will have to develop a digital strategy with a defined scope and objectives on how to achieve the transformation. This is because the ultimate power of a digital strategy lies in its scope and objectives. It is important to note therefore, that the evolving nature of technology makes transformation not a one-time investment and initiative; rather

organizational, operational, and technological foundations are put in place to foster constant evolution and cross-functional collaboration [28].

3. METHODOLOGY

This study was carried out in Anambra State, Nigeria, using a survey method. The name Anambra was derived from the Omabala River which flows through the state and is a major tributary of the River Niger in the state. Anambra State is a south-eastern state and one of the 36 states of Nigeria. The state is bounded by Delta State in the west, Imo State and Rivers State in the south, Enugu State in the east, and Kogi State in the north (see Fig. 1). There are twenty-one (21) local government areas in Anambra State. The 4 major urban centres in the state are Onitsha, Nnewi, Awka and Ekwulobia (see Fig. 2). Awka is the capital city of Anambra State (see Fig. 2). Anambra is the eighth-most populated state in the Federal Republic of Nigeria and the second-most densely populated state in Nigeria after Lagos State [28]. It has an estimated average density of 1,500–2,000 persons per square kilometre and over 60% of its people lives in urban areas. It is one of the most urbanized states in Nigeria [28].

The population of this study constitutes of fully registered professionals particularly Architects, Builders, Structural Engineers and Quantity Surveyor, residing and practicing in the study area. The population of these professionals as obtained from the various secretariats in the state is 105 (see Table 1).

Taro Yamani sample size method was employed to determine the appropriate sample size for this study. Taro's formula is represented as:

$$i.e. n = \frac{N}{1 + N(e)^2}$$

Where "n" is the sample size, "N" is the population (105) and "e" is the level of confidence (95%). Thus, the sample size.

$$n = \frac{105}{1 + 105(0.05)^2} = 84$$

Being a survey research, data were collected through structured questionnaire administered to the selected respondents or their representatives. While, tables, mean score and relative

important index (RII) were used for data analysis and presentation. RII was computed using:

$$RII = \frac{\sum Fx}{A * N}$$

Where,

$\sum Fx$ = Weight given to each statement by respondents and ranges 1 – 5

A = Higher Response Integer

N = Total Number of Respondents

4. RESULTS AND DISCUSSION

Information regarding questionnaire distribution and percentage response is shown in Table 2. Accordingly, a total of 84 questionnaires were administered and only 80 questionnaires were completed, returned and found useful. This corresponds to a response rate of 95%.

The reactions in Fig. 3 shows that 37.5% of the respondents are either very actively or actively involved in construction activities while 20%, and 5% of the respondents went for average and occasionally respectively. The proportion of those that are actively involved and those that are not is 75% to 25%. With this, most of the respondents are quite knowledgeable concerning current developments in the industry.

The response in Table 3 disclosed that the most significant driver to global competitiveness of the Nigerian construction industry is labour market efficiency (0.91), closely followed by technological readiness (0.85), innovation (0.85), good market efficiency (0.84), market size (0.83), institution (0.83) and infrastructure (0.82). Also, Table 3 revealed that macroeconomic stability (0.58), health and primary education (0.69), business sophistication (0.72) ranked lowest. However, the mean score of the responses in Table 3 disclosed that none of the drivers were below 3.00. Hence all the drivers are quite significant when it comes to positioning the industry in Nigeria for global competitiveness. Considering the results in Table 3, it could be seen that the industry at the moment operates at the level of factor-driven economies/competitiveness. Because the key drivers at the moment are factor-driven.

On the other hand, the findings in Table 3 as regard institution, innovation and technological readiness were in agreement with the observations made by [20] on development in IT, scarcity of competent local technological and managerial manpower as key issues on

globalization but differed on the area of infrastructure. Also, the findings of the study with respect to infrastructure and institution support the results of the work done by [7].

Table 1. Population distribution

S/No	Professionals	Population size	Sample size
1	Architects	15	12
2	Builders	34	27
3	Quantity Surveyors	25	20
4	Structural Engineers	32	25
	Total	105	84

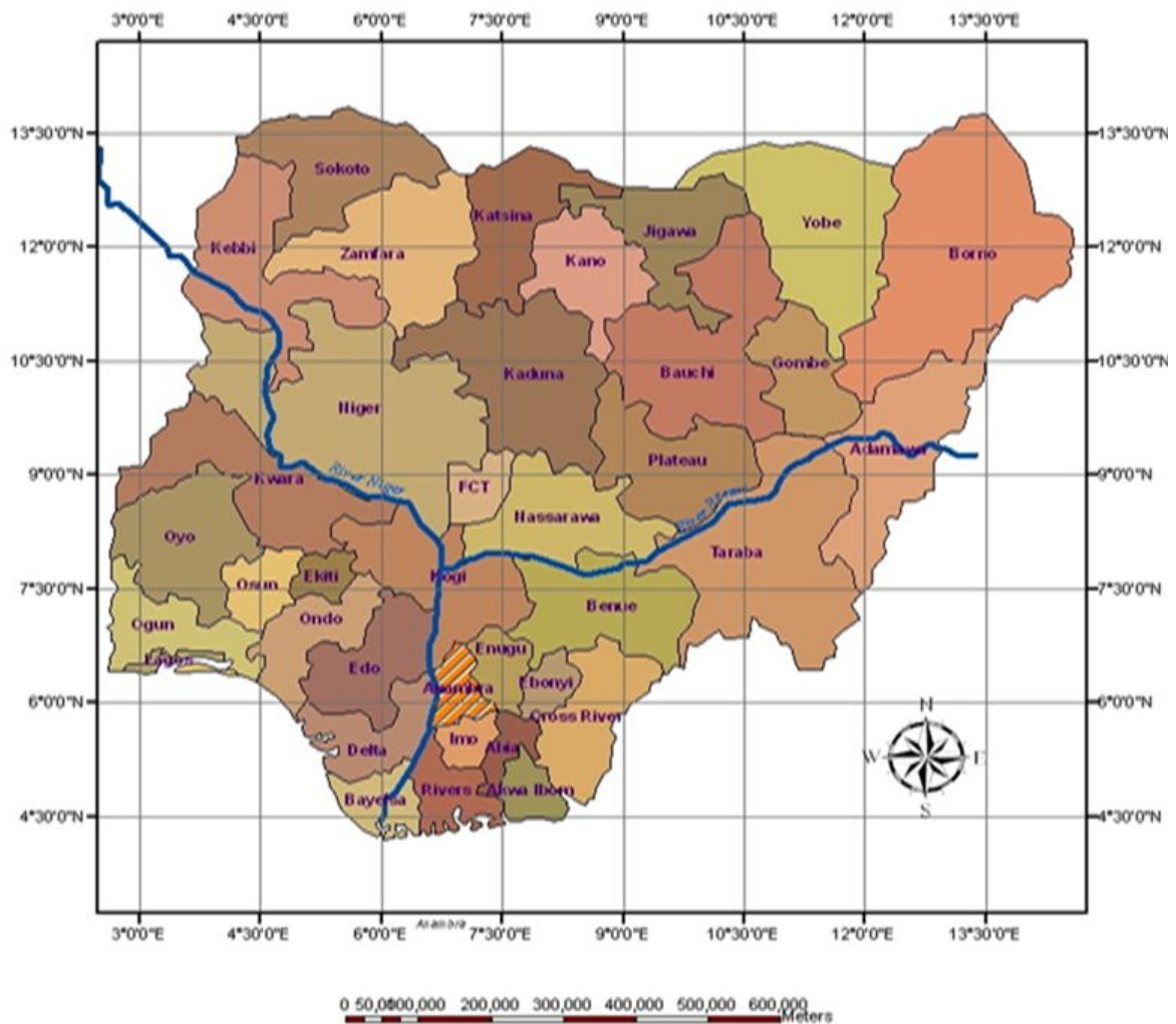


Fig. 1. Map of Nigeria showing Anambra state

Source: [28]

Table 2. Distribution of questionnaire and percentage response

Questionnaires	Frequency	Percentage (%)
Number of questionnaires returned	80	95.23
Number of questionnaires not returned	4	4.76
Total	84	100



Fig. 2. Map of Anambra state showing the local government areas
Source: [28]

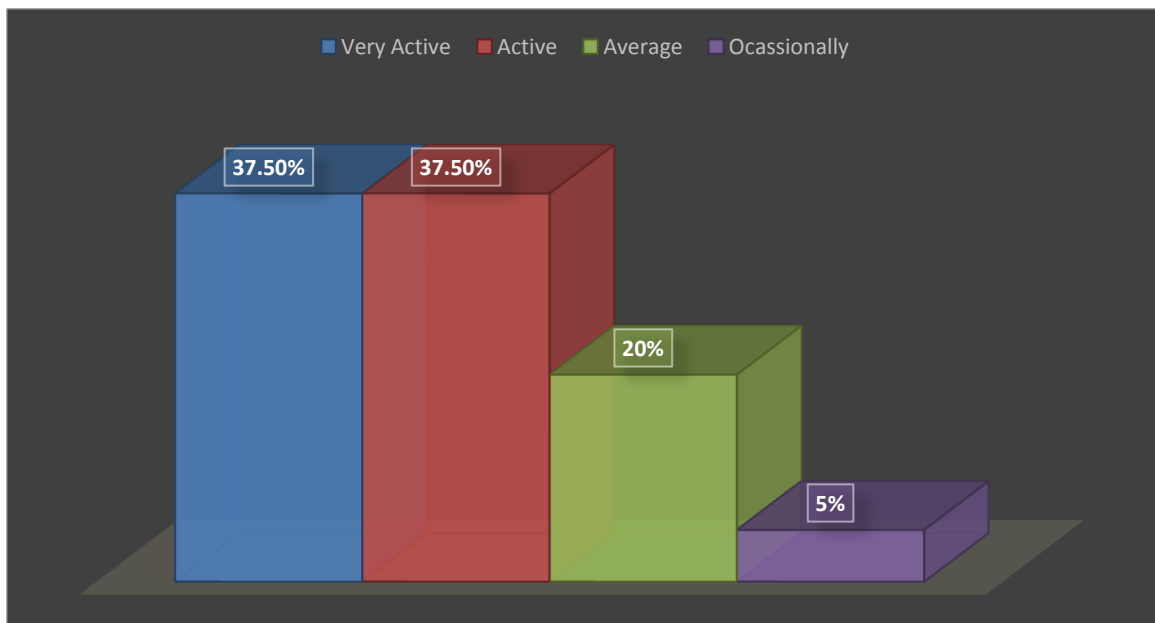


Fig. 3. The extent of involvement of the respondents in construction activities
Source: Field survey, 2020

Table 3. Respondents' perception on drivers to global competitiveness in the Nigerian construction industry

Drivers	Frequency of occurrence					$(\sum F)$	$\sum Fx$	Mean	RII	Ranking
	5	4	3	2	1					
Institution	38	26	10	3	3	80	333	4.16	0.83	5 th
Infrastructure	45	13	13	3	6	80	328	4.10	0.82	7 th
Macroeconomic stability	29	35	10	0	6	80	233	2.91	0.58	12 th
Health and primary education	16	32	12	10	10	80	274	3.43	0.69	11 th
Higher education and training	38	22	7	12	1	80	324	4.05	0.81	8 th
Good market efficiency	29	42	3	6	0	80	334	4.17	0.84	4 th
Labour market efficiency	42	38	0	0	0	80	362	4.53	0.91	1 st
Financial market sophistication	29	32	13	0	6	80	318	4.00	0.80	9 th
Technological readiness	45	29	0	0	6	80	341	4.26	0.85	2 nd
Market size	26	38	16	0	0	80	330	4.13	0.83	5 th
Business sophistication	16	32	19	10	3	80	288	3.60	0.72	10 th
Innovation	44	20	8	6	2	80	338	4.23	0.85	2 nd

5 – 1 (Very significant to Least)

5. CONCLUSION

In today's world the level of competitiveness supporting economic environment help nations to wither business cycle downturns and help to ensure that mechanisms for a solid economic performance for the future are in place. However, the Nigerian construction industry still focuses on the domestic market rather than the international market. Thus, it operates at the level of factor-driven competitiveness. Consequently, in-order to internationalized the construction practice in Nigeria, construction firms must find appropriate strategies that will involve digital innovation, strengthen the institutional, technological and infrastructural needs. Efforts should be made to improve economic environments concerning goods and labour market efficiency. These strategies must be flexible and pro-active to encourage international partnership and knowledge transfer.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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