

Challenges of Sustainable Buildings in Nigeria: Way Forward

A.A. Adewuyi¹

¹ Department of Estate Management, Lead City University, Ibadan, Nigeria.

(adekanmiadewu@gmail.com)

Corresponding email: adekanmiadewu@gmail.com

Abstract The world has gradually moved from conventional buildings to more sustainable ones that promote greater energy efficiency and less environmental impact. However, while the developed countries have steadily embraced the concept of sustainability in their buildings, Nigeria, like most of the Sub-Saharan African countries, is still grappling with traditional building architecture and designs. As a result, the Green Building Council of Nigeria (GBCN) was established to control, monitor and promote the adoption of green buildings. Unfortunately, the rate of adoption has been slow, as there are few or no green buildings in Nigeria. Previous empirical analyses reveal three (3) competing elements at the back of current challenges: limited awareness, poverty (lack of or insufficient fund to execute the projects) and lack of motivation. Therefore, the aim of this study is not only to evaluate the challenges of sustainable buildings (green buildings) in Nigeria but to devise initiatives and strategies to ameliorate sustainability into building development practices in Nigeria. To achieve this, past research studies and interviews were conducted on some students from higher institutions, professionals in built environment and some members of the general public. Findings reveal that lack of awareness and finance to going green are Nigeria's twin main challenges of sustainability. Additionally, results also show the failure of the government to adopt green building practices fully because of social and cultural reasons and the lack of government legislation and incentives that would encourage developers to incorporate green building features into their construction projects and lastly, limited technical expertise. The study recommends that as "introduction to green buildings" has been introduced in the university curriculum, same should be done for other institutions of higher learning, educational institutions and sustainable building expertise (Green Buildings Council of Nigeria) should be ready to sensitize the professionals, real estate investors and the general public on the benefits of sustainable buildings (green buildings) by organizing conferences, outreaches, and workshops. Furthermore, the government needs to play active role in supporting and incentivizing green building projects by introducing policies, regulations, and financial incentives that encourage the adoption of sustainable building practices.

Keywords: Green buildings, sustainable buildings, challenges, strategies, Nigeria

Introduction

In the real estate context, sustainable buildings are expected to provide economic benefits in rental or capital values to the lessors or the real estate investors (Abidin et al, 2012). While there are standard features that influence values, the benefits of sustainable buildings to well-informed house seekers increase the level of interest leading to competition in the property market. Accordingly, competition in the property markets could lead to two possibilities, including (1) gazumping (a scenario whereby the seller increases the price of a property above the intended amount) and (2) rivalry among market participants (Adetayo, 2019).

Sustainable buildings offer a great reduction in energy consumption and negative environmental impacts. On the other hand, the inability to go "green" is one of the reasons for avoidable health-related challenges, higher expenditure on consumption and reduction in productivity (Ahn et al, 2013). However, despite the benefits of sustainable buildings, awareness in developing economies is still a significant concern. Unlike developed economies, where awareness of the benefits of green buildings is known, a large percentage of the population in developing countries still grapples with understanding the concept. Thus, although a large percentage of the population in developing countries is unaware of the benefits

of sustainable buildings, the regions have been inadvertently practicing the concept (Ahmed et al, 2022)

In Nigeria, as in several developing countries, the concept of sustainable building (green building) is at the early stage where there is lack of awareness and inability of the government to support and incentivize the practice (Olatunde & Olabode, 2022). As a result of this, the people have been deprived of environmental opportunities and economic benefits of sustainable building.

There is a paucity of research on sustainable buildings challenges amongst construction stakeholders in Nigeria, indicating that the idea has yet to be efficiently implemented, as it has in many developed nations. In view of this, this paper examines the challenges to sustainable building (green buildings) in Nigeria, by sampling the opinions of building stakeholders. The findings of this study will educate people and inform construction professionals and policymakers about potential hurdles to green building construction in the construction industry, approaches and strategies to ameliorate sustainability into building development practices in Nigeria.

The few studies conducted on sustainable building challenges are thus presented:

Sustainable building is relatively costly

One of the hurdles to the use and practice of green building, according to several authors is the high costs involved in building sustainable structures related to conservative buildings, as well as the danger of unplanned costs (Hakkinen and Belloni, 2011; Ametepey et al., 2015; Byrd and Leardini, 2011; Olatunde, 2022). In most developing nations, such as Nigeria, the additional expense of implementing green building components into construction projects, which is mostly determined by local environmental factors such as temperature, building conventions, and labor levels of skill, is a significant obstacle to establishing green buildings. According to Shi et al. the high cost of green building is primarily due to overestimation of energy-saving strategies, increased consultancy fees, and underestimating of cost-saving methods (Shi et al., 2013).

Scarcity of Sustainable Building Materials

Another impediment to green building uptake and use is the paucity of green components and materials in the construction sector. According to several surveys, the majority of building projects in developing nations experience challenges obtaining green supplies locally (Davies and Davies, 2017; Aktas and Ozorhon, 2015; Shen et al., 2017). Ecologically friendly goods that have a lower impact on the environment and are required for the implementation of green building standards are not commonly available in the building construction business. Even in impoverished countries like Nigeria, where these supplies and resources are accessible, delivery times are frequently long.

Scarcity of information and expertise on the economic advantages and opportunities of green building.

Poor understanding and information about the economic advantages and possibilities of green buildings also serves as a deterrent to its use. In most developing nations, the lack of information on the economic benefits of green building is regarded as a major concern (Bernstein, 2013; Abidin et al., 2012; Nguyen et al., 2017). According to Azeem et al., (2017), a lack of understanding, awareness, and information, is a significant impediment to the successful implementation of sustainable buildings in Nigeria.

Lack of or insufficient incentives to encourage green building concept.

Most developing countries' construction industries appear to be underperforming in terms of providing subsidies to contractors who fulfill green building standards and experts who include green building techniques into their models (Azeem et al., 2017; Ndiokubwayo et al., 2013; Oguntona et al., 2019). This is consistent with Chan et al and Darko and Chan's assertions that a lack of government subsidies is a major impediment to the application of sustainable building technologies (Darko and Chan, 2016; Chan et al., 2018). As a result, in order to stimulate the use of sustainable building, the government must implement efficient financial and non-financial incentive schemes that will help to mitigate the huge investment associated with sustainable building. Serpell et al. feel that providing incentives for green building can be used to lower contract costs, shorten contract period, and maintain an acceptable level of safety and health.

Technological/capacity stumbling block

Studies have identified technology and manpower limitations as one of the primary obstacles impeding the development of green buildings in Nigeria. For instance, Hakkinen and Belloni (2011) and Opoku and Ahmed (2015) recognized these as hurdle owing to a lack of competence in green building approaches and their long-term viability. The construction stakeholders according to Opoku and Ahmed, are not only expected to be knowledgeable, but also to form an embedded team that includes all these stakeholders (Opoku and Ahmed, 2015). This viewpoint is backed up by the International Labour Office, which argues that changing skill requirements are the primary cause of labor shortages and a lack of industry skill in the construction industry (International Labour Office, 2011). This is owing to the emergence of green construction designs, technology, and practices, which have rendered previously appropriate skill sets obsolete. As a result, Opoku and Ahmed realized the need of developing capacity as a key aspect in the advancement of green construction methods (Opoku and Ahmed, 2015).

Materials and Methods

To attain the research goal, a cross sectional approach was predominantly used. Secondary materials such as books, publications, workshops/ conferences papers, journals, magazines, and internet sources, among others, were used to examine studies on sustainable buildings and challenges. To determine the numerous constraints impeding the adoption of green building in Nigeria, past studies were used coupled with interviews conducted on different categories of people: students of higher institutions, professionals in built environment, real estate investors and general public. The interview was conducted on individual and group bases. A total of people interviewed was fifty. The respondents' profile were supplied in the first section, which included their age, gender, educational background, years of experience, and level of experience in building construction. The second portion, on the other hand, determined from literature different constraints impeding the application of green building in Nigeria. For easy analysis, a five-point Likert scale was used to categorize the respondents' opinions and their values were classified in order of priority to highlight the critical value of each factor.

Results and Discussions

In the interviews conducted on the various categories of respondents, the data below were extracted.

Table 1: Interview Respondents

Respondents	Frequency	Percentage
Students	10	100
Professionals in built environment	15	100
Real Estate Investor	13	100
General Public	12	100
Total	50	100

Challenges of sustainable buildings (Green buildings) in Nigeria

Table 2: Awareness of sustainable buildings (Green buildings) and understanding green building practices

Respondents	Mostly aware	Aware	Partially aware	Not aware	Mostly not aware
Students			2	8	
Professionals in built environment		5	3	7	
Real Estate Investor		3	2	8	
General Public		2		8	2
Total	0	10	7	31	2

Table 3: Government support & incentives for sustainable building projects

Respondents	Mostly done	Done	Partially Done	Not done	Mostly not done
Students				1	9
Professionals in built environment		2	2	1	10
Real Estate Investor		1	1	5	6
General Public			2	2	8
Total	0	3	5	9	33

Table 4: Government policies, initiatives and regulations that provides supports and encourage the adoption of sustainable building practices

Respondents	Mostly none	None	Partially none	Available	Mostly available
Students		8	1	1	
Professionals in built environment	5	6	3	1	
Real Estate Investor	5	7	1	2	
General Public	7	2	2	1	
Total	17	23	7	5	0

Table 5: Sustainable building Technical Expertise

Respondents	Mostly adequate	Adequate	Partially adequate	Inadequate	Mostly inadequate
Students			1	3	6
Professionals in built environment			3	8	4
Real Estate Investor			2	9	2
General Public			1	9	2
Total			7	29	14

Apart from the identified challenges from the literature, this research has been able to collate the responses of the respondents with regards to the sustainable building (green buildings) challenges.

Discussions

Different categories of respondents were interviewed (students, professionals in built environment, real estate investors and general public on the challenges of constructing sustainable buildings in Nigeria.

With regards to awareness of sustainable buildings (green buildings) in Nigeria (Table 2), in all, total number of respondents that are aware of sustainable building practices in Nigeria was 10, followed by partially aware which amounted to 7, mostly not aware, 2 while 31 signified they are not aware. The results show that majority of people are not aware of sustainable buildings (green buildings) in Nigeria.

Government support and incentives for sustainable building projects (Table 3), 3 signified that government support and give incentives for sustainable building projects, while 5 were of the opinion that it is partially done, 9 was of the view that nothing is being done by the government and lastly, 33 was of the view that government has mostly done nothing with regard to support. This shows that government' support and incentives to ensure building sustainability is not in place.

Government policies, initiatives and regulations that provides supports and encourage the adoption of sustainable building practices (Table 4),

0 signified that government mostly have no policies, initiatives and regulations and provide no support and encourage the adoption of green building practices, 3 signified that government is doing (Table 4), 5 signified partially done, 9 signified not done and lastly, 33 was of the opinion that government has not done anything or not doing anything. Since government has not approved green building practices, it will be difficult to have her support.

Sustainable building Technical Expertise (Table 5), the responses shown by the people are thus: 0 people show that technical expertise are mostly not adequate, 0 also show that the expertise are adequate, 7 was of the opinion that they are partially adequate, 29 said they are inadequate and lastly, 14 was of the view that technical expertise were mostly inadequate. For the expertise to increase and educate the people, government need to support in every way.

Conclusion

The findings from this study can be generalized since it took cognizance of other similar studies done, and the respondent's location within the country cannot be categorically decided. This study also discovered the challenges of sustainable building adoption in Nigeria. The most critical challenges were found to be lack of understanding and awareness about the economic advantages and opportunities of green buildings, government support is greatly insufficient, unavailable legislation, green building is thought to come at a high price and inadequate technical expertise. Nonetheless, it was determined that the government must lead and take approach to proactively equip the country's urban landscape for green buildings by increasing awareness through education and public campaign to dispel misconception and showcase long-term benefits of sustainable building practices. Development of training programmes to equip professionals with the necessary technical expertise. Government, to achieve green building practices in Nigeria, should use the following initiatives and strategies: involvement of private sector in constructing sustainable buildings, establishment of Green Building Council of Nigeria to provide guidance and certification for green building projects and lastly, integration of renewable energy technologies like solar power, wind energy and other renewable sources in the buildings. It is therefore advisable that stakeholders in the construction space need to show their skills and attempt further education in other to grasp more knowledge on the importance of the adoption of technology and understanding the cultural and social differences in the construction environment such that it would increase their knowledge on technologies needed for green building adoption in Nigeria.

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