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GREEN COMMERCIAL BUILDINGS FOR BENEFITS REALIZATION IN NIGERIAN CONSTRUCTION INDUSTRY

Abstract:

Despite all the global stakeholders call for a paradigm shift from the traditional design and construction practices, green buildings awareness for greater client`s benefits realization is still lagging in the Nigerian construction industry. It is premise that, lack of adequate client awareness on the potential benefits realization and high costs associated with design and construction are seen to be key barriers in delivering green and sustainable buildings in the construction industry. Viewed from the concept of community of practice (CoP), it is the corporate social responsibility of the construction industry stakeholders to improve the current level of client`s awareness on green buildings and benefits realization. It is argued that a major set-back to green building programs adoption is the lack of public awareness. This paper seeks to assess the level of client`s awareness on green building designs and the potential long term benefits to be achieved by delivering green and sustainable buildings. The study adopts an inductive approach and qualitative method. The data for analysis was collated through interview with both informed and ill-informed in the Nigerian construction industry and analyzed using thematic analysis. In this paper, design and developing green buildings is seen to have a great potential to optimize client's/owners benefits realization, through energy efficiency; organizational level of productivity and minimize building lifecycle operation costs in Nigerian commercial buildings. This can only be achieved if the client is well informed of the benefits to be realized in short term and in the long term.

Keywords:

Client Awareness, Benefits Realization (BR), Green Buildings, Sustainability.

JEL Classification: Q56

1.0 Introduction

The foundation of a sustainable future largely depends on the knowledge and involvement or engagement of the people, with a clear understanding of individual behavioral consequences. The construction industry has been linked with the contribution of negative effects to earth. As the concepts of green building took center stage and planning curriculum. Green and sustainable buildings have not received a resounding public attention as required to drive the green and sustainability agenda

Globally, building consumes major part of energy in construction and their associated maintenance practice. Their impact on the environment is of significantly higher. The construction industry is a key driver to infrastructure development and it is seen as being responsible for about 25-40% of energy usage, 30-40% of materials resources consumption, 30-40% of waste production and 30-40% of the greenhouse gases released to the world. In addition, it was estimated that about 30% of newly built or renovated building suffers from sick building syndrome, thereby exposing occupants to unhealthy environmental conditions. Green building concept is being propagated as the primary strategy to achieve sustainable infrastructural growth. Employing green concepts entails becoming more conscious about individual role and duties in alleviating the adverse effects on the environment (Umar & Khamidi, 2012; The World Watch Institute, 2012; Stojanovska-Georgievska *et al.*, 2017). However, delivering sustainable design and construction project requires a proactive action from all stakeholders engaged in construction and maintenance of a building (Atkins Consultants, 2001). It requires the willingness to explore new concepts in construction approach and the readiness employ new products, ideas and practices (Ofori *et al.*, 2000). It has been argued that a major set-back to green building programs adoption is the lack of public awareness.

Public awareness has in the past been associated with promoting support for causes and policies. As seen in the health sector in the case of health issues such as polio and HIV/AIDS have all used the supremacy of raising public awareness to improve support for their issue. Education and awareness often received credit for increased levels of support, even though there is lack of empirical evidence to support the notion that, awareness alone is responsible for increase support (Irwin, 1993). They further posit that public awareness is comparable to publicity. Publicity is often used to develop an awareness of the public, which in turn determines the level or degree of support in a given community (Irwin, 1993). As awareness increases among state and local government agencies about the economic, health, environmental, and social benefits of green building, a corresponding need arises for effective green building policies, that state and local agencies can adopt and promote to their constituents (Barbara, 2006).

The building sector accounts for the majority of electricity consumption in Nigeria. This will certainly upsurge considerably in outright terms in the future driven by a rapidly increased population, migration from low energy consuming rural dwellings to urban

centers, and improvements in living standards. However, energy efficiency measures are seen as the economical way of enhancing the state of energy supply in Nigeria with the inadequate or shortage of electrical generation and transmission capacity (NNBEEC, 2017). Based on the findings of Energy Commission of Nigeria (2014) it was estimated that households account for 78% of the energy consumption. This is a clear distinction with Brazil and South Africa where the major consumption is by industries. In Nigeria, energy consumed by the buildings is mainly due to cooling systems such as air conditioning and lighting (see, Figure 1). Even though, there is a lack of reliable data on total energy consumption in Nigeria, this is due to inadequate metering of about 55% end-users, energy consumed by residential buildings accounts for more than 50% of the total energy consumed in the country (Energy Commission of Nigeria, 2014). This is seen as a major barrier to energy efficiency.

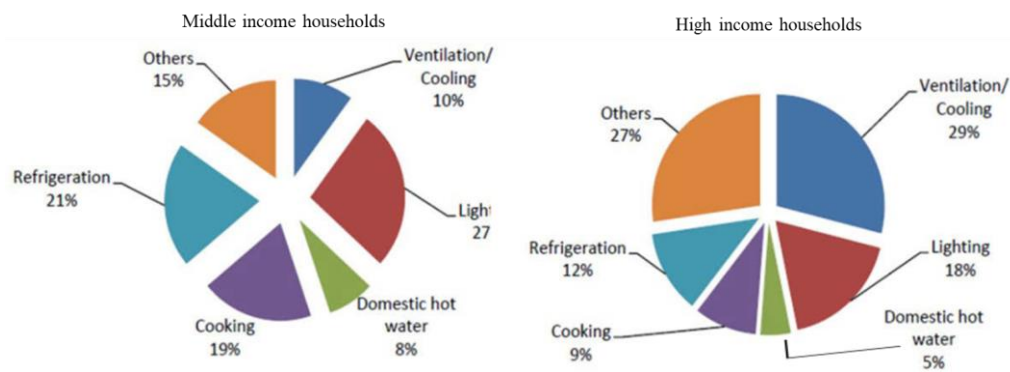


Figure 1. Energy consumption in middle income and high income households (Energy Commission of Nigeria, 2014)

Despite all the global stakeholders call for a paradigm shift from the traditional design and construction practices, green buildings awareness for greater client's benefits realization is still lagging in the Nigerian construction industry. It is premise that, lack of adequate client awareness on the potential benefits realization and high costs associated with design and construction are seen to be key barriers in delivering green and sustainable buildings in the construction industry. Viewed from the concept of community of practice (CoP), it is the corporate social responsibility of the construction industry stakeholders to improve the current level of client's awareness on green buildings and benefits realization. This paper will corroborate the findings from extant literature of previous studies conducted with respect to public awareness level on green and sustainable buildings.

A. Public awareness

The antagonistic environmental effects of booming construction activities have led to a growing need and necessity for more sustainable buildings (Umar & Khamidi, 2012), as people spend more than 50% of their time in indoors, where indoor environmental quality can affect occupants' health and productivity (Sundstrom *et al.*, 1994). Sustainable development is faced with numerous set-backs, such as rapid increase in urbanization rates, social issues, low skill levels, environmental degradation couple with uncertainty in the economic environment (Alsubeh, 2013).

A study conducted by Abidin (2010) clearly demonstrated that public awareness and engagement or participation is significant for green building growth and development. These results were further corroborated when the Malaysian Government informed developers to be proactive in minimizing the negative effects of construction activities. Similarly, Häkkinen & Belloni (2011) based on their findings established the most significant success factor for green building projects is public awareness of sustainable concepts and related benefits. In addition, Manaktola & Jauhari (2007) based on their research on public awareness of green lodging in India, established that the public were generally aware of green building environmental benefits and supported green hotels. Even though, some of the respondents were not willing to pay more for extra green features, even when those features could provide a significant healthy environment.

On the other hand, a study carried out Eves & Kippes (2010) in New Zealand on the potential buyers' awareness of sustainable design concepts, clearly shows that, despite voluntary government measures to support green building projects implementation, the important of such construction project was low. Based on the findings of these extant review of previous studies, there is a strong need for effective ways to further enhance and develop the level public awareness on green building. Awareness is a good plan setting and marketing exercise assisting the general public to understand specifically what and why this is a critical issue, the objectives, and what can be done to realize all these. Industries usually attempt to make a target audience "aware of" a product, service or issue such as new law about the importance of recycling (Lacey, 2008). The main aim of a public awareness is basically to inform people in real-time of current happenings. An awareness campaign is commonly followed by a "reminding" campaign, a loyalty campaign, a follow up campaign, and the assessment report will probably form the basis for these (Umar & Khamidi, 2012).

Previous studies show that, advertising frequency research and observation of communication styles demonstrate that people must be exposed to a message several times before the message becomes successful. Despite the fact that the real number of exposures for best message recall is debated, it's obvious that a multi-faceted communications and marketing campaign is the greatest method to obtain results especially when reaching many people (Umar & Khamidi, 2012). Innovations in

technology have developed further strategies to deliver and collect information for such as through the Web, signs and print newspaper adverts. The cornerstone of any public awareness campaign is a set of “Key Messages” or core statements repeated throughout all outreach efforts to ensure that the public hears and understands the campaign’s purpose (Solar Energy Centre, 2008). The green building, key messages disseminated will be educational and indicated in a clear layman’s terms, understanding “green building” in consumer-friendly “brand” terminology.

B. Public awareness strategies

(i). *Media Relations* - Create news releases, bylined articles, letters to the publisher, suggestion sheets as well as additional mass media materials for circulation to qualified editors and journalists in order to reach viewers through “earned” media. (ii). *Community Relations* - Develop “direct-connect” possibilities to reach audiences, such as trade show participation, communicating events with local community organizations, function sponsorship, proper partnerships and much more. (iii). *Web site Development* - Create a web internet site that provides campaign messages straight to target people, such as interactive tools such as energy efficiency calculators. (iv). *Advertising* - Build effective, key message-based advertisements for print out, TV, radio stations and online media; negotiate additional “runs” through media public support announcement coordinators (Jamison, 2008; Umar & Khamidi, 2012; Omar *et al.*, 2016). (v). *Others* – Such as sales office/ model home, builder/contractor, suppliers, real estate agent, home shows, brochure and family/friends are seen as important strategy for increasing public awareness on green and sustainable buildings.

2.0 Methodology

This research is grounded on a deductive research method that relies on the quantitative research approach for systematic empirical investigation of a social phenomenon through statistical techniques (Nor, 2009). A simple random technique was employed to identify the potential property development clients in Kano state, Nigerian. Questionnaires were distributed using online survey monkey and face-to-face delivery was also employed. A total of 129 usable responses were retrieved and analyzed using statistical package for social science (SPSS). Descriptive statistics was employed to establish the public awareness level with regards to green and sustainable buildings in the Kano state construction industry.

However, to conduct a research of this nature on participants with different educational levels set a limit to the study. It is noted that, the research is not a true representation of the whole Nigerian construction industry and more or wider green buildings projects cases should have been included in the research to make certain conclusions. Hence, the need for further research on a wider population.

3.0 Data analysis

The measurement scale of green building awareness in this research was based on rankings developed on a Likert scale, a five (5) point awareness scale was used. This type of ranking was based on a similar study that was carried out by (Jamison, 2008; Umar & Khamidi, 2012). The data was generated from the awareness ranking scale that was developed and mean scores were calculated for the respondents group.

Table 1. Demographic summary of the respondents

Demographic Variables		Frequency	Percentage (%)
Field of Expertise	Construction Industry	65	50.4
	Non-Construction Industry	64	49.6
Educational Level	Diploma	9	7
	Degree	48	37
	Master	57	44
	PhD	6	5
	Others Specify	9	7

$n = 129$

Table 1 represents the demographic characteristics of the respondents in the final data sample. The details show that 50.4%, representing 65 of the respondents were from the construction industry related field, while 49.6%, representing 64 respondents were from the non-construction industry related field. The findings on the respondent's educational level indicate that majority of them hold a masters' degree, with 44% representing 57 respondents; whilst 37% representing 48 respondents were bachelor degree holders. On the other hand, 7% representing 9 respondents were diploma holders. Interestingly, 5% representing 6 respondents hold Doctorate degrees in various disciplines. In addition, 7% representing 9 respondents had no tertiary education qualifications.

3.1 Public awareness on green building

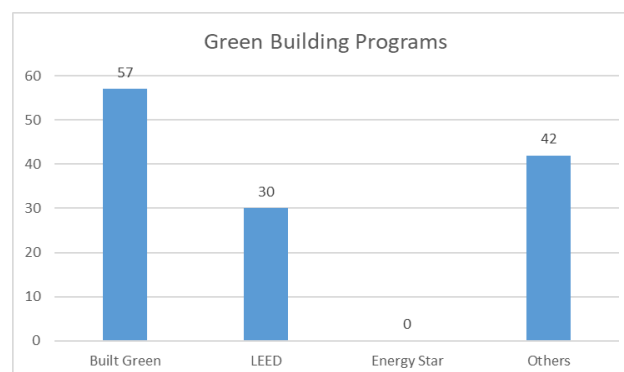


Figure 2: Public awareness on green building programs

Figure 2 clearly indicate the respondent's awareness on green building programs. The results indicate that 44.2%, representing 57 of the respondents were aware of "built green" program, while 23.3%, representing 30 respondents were aware of "LEED" program. Interestingly, 32.6% of representing 42 respondents were "NOT" aware of any green building program.

Table 2. Response on "what green building mean to you"

	Freque ncy	%
No idea/don't know	35	27.1
Environmentally friendly	49	38.0
Quality materials construction	3	2.3
Better built homes	3	2.3
Energy efficiency	27	20.9
Healthy indoor air	3	2.3
Built with recycled materials	3	2.3
preservation of natural resources	3	2.3
Parks, greenbelts, hiking trails, landscaping	3	2.3
Total	129	100.0

Based on the analysis on what green building mean to the respondents as shown in Table 2 above. The findings show that, a significant majority of 38% representing 49 respondents indicate that "green building mean environmentally friendly" whilst 27.1 % representing 35 respondents "have no idea or do not know" green building means. Interestingly, 20.9% representing 27 respondents indicates that "green building means energy efficiency".

Table 3 Awareness medium

Awareness medium	How did you first learn about green building		Have you recently heard any information about green building	
	Freque ncy	%	Frequency	%
Sales office/model home	18	14.0	15	11.6
Builder/contractor	12	9.3	3	2.3
Home show	3	2.3	3	2.3
Television	30	23.3	27	20.9
Magazine	3	2.3	18	14.0
Radio	3	2.3	3	2.3
Website	30	23.3	18	14.0
Friend/family	15	11.6	3	2.3
Brochure	3	2.3	6	4.7
Others specify	12	9.3	33	25.6
Total	129	100	129	100

$$n = 129$$

The findings from Table 3 above indicates that 23.3% representing 30 respondents “*first learn about green building on television*” whilst, 23.3% representing 30 respondents “*first learn about green building through internet websites*”. This is a clear indication that, builders and contractors do not enlighten potential clients towards green building development in Kano state construction industry. On the other hand, 25.6% representing 33 respondents “*have recently heard information about green building through other means*” which were not considered for this research. Interestingly, 20.9% representing 27 respondents “*have recently heard information about green building through television*”.

A. When thinking about a “green” home compared to the same house that is not built to a “green” standard, how would you rate a green home on

Table 4. Rating green building over conventional

	Mean(x)	Std. Deviation	Mean (x) Ranking
<i>Energy efficiency</i>	4.06	.663	1
<i>Environmentally friendly</i>	3.88	.948	2
Quality materials	3.06	1.091	
Costs less in utilities and maintenance	3.11	1.189	5
Better built overall	3.25	.920	4
Much higher resale value	3.11	.948	5
<i>Conserves much more water</i>	3.55	.874	3

$$n = 129$$

The findings on rating green building over conventional building as shown in Table 4 above indicate that, when thinking about a green home or building, *energy efficiency, environmentally friendly and water conservation* are key attributes of green building compared to conventional non-green buildings.

B. Factors that influence client decision in buying green building/remodeling/updating

Table 5. Green building decision

Decisions	Green Building Decision			Green Product Decision		
	Mean (x)	Std. Deviation	Mean (x) Ranking	Mean (x)	Std. Deviation	Mean (x) Ranking
Purchasing home cleaning products	3.30	1.492	2	3.72	1.067	1
Purchasing yard maintenance products	3.27	1.441	3	3.72	1.211	1
Remodeling/updating your home	3.67	1.381	1	3.48	1.250	3

Next/New home	3.67	1.329	1	3.60	1.283	2
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$$n = 129$$

The findings on green building/product purchase decision as shown in Table 5 above indicate that, when potential developers or clients are planning to buy a new house or remodel/update their homes, they often consider green features as part of their decision, but eventually during the implementation stages it is often skipped. On the other hand, potential clients often consider purchasing green *product for home cleaning* as well as *maintenance products*.

4.0 Conclusion

As more developers, owners, consultants, designers and vendors are participating in the global green building movement, there is the need for further effort by stakeholders in construction industry as part of their corporate social responsibility to the environment and clients as well to enlighten the general public on the potential benefits realization of green projects. The mixed effort of people and organizations to switch towards green buildings is still lagging in Kano. The humankind has influenced so much on the worldwide natural environment to twist its stability. As a result, nowadays, as the dependents of the environment, at whatever stage in the community, this is a timely responsibility of all the general public to enhance our sight in the direction of transforming our perceptions and the way of living.

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