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Sustainability in Construction of Commercial Buildings in Anambra State, Nigeria: Re-Orienting the Antique Construction Ethics

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A B S T R A C T

The construction sector has a higher ratio of mass exploitation of earth reserves compared to other development sectors over time, degrading eco-components. In Anambra State, there is a high level of eco-degradation practices due to the building of commercial structures, ranging from unhealthy work plans to the inability of designers to incorporate green-culture initiatives in their designs. The objective of this study is to comprehensively evaluate the construction and operational practices of some of the functional commercial buildings in the state and ascertain the impacts of not taking sustainability considerations into account during construction. A qualitative and quantitative method of data collection was implied in the study, and the resultant findings exposed some prevalent sustainability anomalies in construction, thus igniting the need for effective and adaptive sustainable policies that would guide practices in the construction industry.

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INTRODUCTION

Sustainable construction entails a well and detailed plan of activities that incorporate the three pillars of sustainability, and showcase practical highlights on ways to achieve the recommended benefits across the three sustainable pillars. A sustainable approach in construction has now and futuristic tendencies in proper maintenance and nurturing the whole gains attached to a given venture on a long-term basis (Asman et al., 2019, Hafez et al., 2023, Mavi et al., 2021). The way and manner in which each of these three fundamental pillars is being stretched within a place go a long way in addressing how well people perceive sustainability concepts. Investors/clients are basically concerned about the economic gains that will be returned on their investments alone, and this mindset to work oftentimes conflicts with the sustainability concept which is a long-term and holistic plan that encompasses the assessment of other vital pillars of sustainable development; social and environment. Basically, environmentally friendly building constructions cater for more benefits in the long run as they minimize prevailing and unforeseen costs. In the same vein, the main goal of every sustainable building construction is to develop a durable edifice (Tang et al.,2020), that will be easy to maintain (Akadiri et al., 2012; Nasereddin, & Price, 2021), designed for future flexibility, expansion and capability of safe and efficient demolition (Kabirifar, 2020; Kröhnert et al., 2021), and with the use of recyclable materials in all phases of construction and deconstruction [Janani & Kaveri,2021). Achieving sustainability in the building and construction industry is crucial as it contributes to the global transition to a sustainable carbon-neutral built environment (Scrucca et al., 2023; Fei et al., 2021).

Sustainable construction has been increasing rapidly around the world in recent years due to resource reduction (Lima et al., 2021; Yilmaz & Bakis, 2015), but despite the ever-increasing availability of sustainable solutions, they do not seem to be widely adopted [Weniger et al., 2023; (Robichaud & Anantatmula, 2008). The construction of commercial buildings by nature is multi-faceted; it consumes natural resources and impacts the natural environment. The construction industry has been an essential division for sustainable development because of its impacts on the environment (Ofori, 2007; Shen et al., 2010; Sala et al., 2023), and needs to. meet present and future generations' needs by conserving energy, water, and natural resources through reuse, recycling, innovative design, and minimizing waste and pollution (Lima et al., 2021, Othman, A.A.E. and Abdelrahim, S.M. (2020); Amaral, et al.,2020,).

However, the sustainability concept is a long-term approach that is still a perceived process with a protracted return on investment, thus discouraging wide acceptance of its implementation (Barbosa Junior et al., 2023). Promoting sustainable construction has been restricted due to the perception that it will result in higher risks and increasing construction costs (Lowe & Proverbs, 2003, Shen et al., 2023, Gyadu-Asiedu, 2021, Okoye et al., 2022). Within the construction environment, the essential facts remain on the quick return on investment and every key construction player's interest is grilled on financial recompense, leaving behind sustainable plans that have the integral potential of

spanning through and beyond the projected project life cycle. The challenges facing the adoption of sustainable construction practices in developing countries like Nigeria are real and similar to other developing economies of African countries (Toriola-Coker et al. 2021). In Nigeria, there is a general perception among clients that adopting sustainable construction is expensive (Ifije & Aigbavboa, 2020). Due to this misconstrued perception, sustainable plans are quite ignored by building practitioners in Nigeria on the premise that the measures will attract more cost and hence affect their competitive edge. On the other hand, there is a widely hypothesized theory that most construction practitioners always differ on their individual drive and rationale for building, and are mostly influenced by the client's choice which is rooted in cost criteria. Previous studies on the same subject in the state aligned sustainability challenges to poor awareness of the larger population on sustainability goals (Tunji-Olayeni et al., 2018, Ezeokoli et al., 2023). Within the construction sector, there is a growing interest in the ethos of sustainable development. However, it is unclear if most countries in Western Africa share the same inclination, owing to the particular development needs and the challenges that these countries face (Esezobor,2016). The aim of this paper is to examine and highlight the current unsustainable practices in the construction of commercial buildings in Anambra State.

THEORETICAL REVIEW

Impacts of Unsustainable Practices in Building Commercial Facilities in Anambra State

A common practice in the State is to erect a commercial edifice, and demolish and upgrade existing structures to meet up with the demand and financial gains without considering the most vital development practice that prevails. Constructing a commercial building may be seen as one of the prevailing factors that impact the State economy and also an important component of social development that has groomed cultural attributes and patterned the way of life of the people. It is still paramount for the entire society to make it an implicit and explicit responsibility to safeguard the environment. Though the construction industry has been identified as one of the most unsustainable industrial sectors, there is increasing awareness of the need for improvement through initiatives and movements for innovation (Shittu, 2020). The construction industry is one of the main contributors to the depletion of natural resources and a major cause of unwanted side effects such as air and water pollution, solid waste, deforestation, toxic waste, health hazards, global warming, and other negative consequences (Ametepey & Ansah (2015). Constructing a commercial building involves complex activities taking place at the same time, with each of these having the potential threat of impacting negatively the natural ecosystem. With no doubt, it has become obvious that the public-private partnership initiative over the last decades has widened the development horizon of infrastructure development. In recent times, the Infrastructure Concession Regulatory Commission (ICRC) based on their commission's perceptive move has propounded some working principles that

have made procurement exercise more enticing and encouraging for private innovative developers with a swift flair in taking up a whole body of challenges that emanate in complex projects like commercial buildings, but only with a linear economic aim, that are not sustainably comprehensive or in no detail consider standout sustainability means on projects of high magnitude.

Environmental Impacts

During the construction stage, typical environmental impacts from implementing a project span from air pollution, degradation of water quality, emission of sulfur dioxide, noise pollution and generation of solid waste. A lot of toxic wastes are generated during the construction of commercial buildings which are of a highly poisonous mix, and also ever-present during the facility's operational life cycle. These poisonous mixes when washed inside streams and rivers, pollutes the aquatic environment and also poise unsafe water source for human consumption, and to the aquatic habitats. Every Nigerian is conversant with the power and energy challenges faced and with a great dependency on fossil fuels as a major source of energy. It is a known fact that most of the fossil fuels used in these dense environments have the disadvantage of depleting the ozone layer and immensely contributing to global warming. A survey on the majority of the functional commercial facilities (markets) in the State has shown that a large percentage of these gases are being generated within these facilities due to unplanned sustainable activities. Virtually most of these facilities were designed with no central power generating source leaving every occupant at their own peril of devising their own power source. As green energy alternatives like solar energy, and windmills as energy sources have not gotten the desired recognition, it has now become an acceptable norm that every outlet in these commercial environments sought their own power generating units, and coupled with the epileptic power supply; constant powering of these generating sets and the consequent emission of hazardous gases becomes inevitable. As a result of the poor structural design of road networks and lack of routine maintenance of these road networks within this environment, the few good ones are densely ploughed thereby resulting in incessant road congestion. The users of heavy trucks, cars, tricycles, and humans alike make use of these roads at the same time, and this on a daily basis endangers the lives of the exposed individuals who inhale the gases emitted by these jam-packed vehicular movements.

Erosion sites are common with most of these unsustainably planned market construction projects because of some felled trees that were flood restraints and are no longer in existence and with no other alternate drainage system wholly set in place. State government often time permits the creation of burrow pits for such projects without taking proper consideration and all these are a result of dormant policies on earth exploitation. Sustainability is not a nascent practice in all development endeavours across the globe, but measures on the larger societal appreciation of the need for nurturing the concept. The myriad of shortcomings that trail unsustainably planned construction projects ranges from economic, and environmental, to social difficulties. It is obvious,

that commercial buildings are classified projects of known huge magnitude with a high tagged propensity to affect the immediate ecosystem, but with a proper sustainable framework in action, the impact can be ameliorated. Instituting a commercial building is a necessity, not only for economic recompense but also for its societal acceptance as a vital social development component.

METHODOLOGY

Qualitative and quantitative research methodologies were used sequentially in this study. The study was grouped into phases (first & second). The first phase of the study was based on the qualitative method of investigation, which allowed unlimited expression from the respondent. An open-ended question format was used by the researchers in the first phase of the study to elicit wider information on the practical knowledge of sustainability concepts among a few randomly selected practitioners in the construction industry in the State, and also to capture important antecedents and outcomes of interest that might not surface when surveyed with pre-determined questions. The investigative questions of an open-ended structure were adapted from Kiron et al., (2012) MIT Sloan Report that is geared towards pressing subjects like green building awareness/ technology, and environmental impact assessment strategies/criteria were sent to these few selected individuals (Building contractors (3), Architect (2), Quantity surveyor (2)) in the State through electronic mail after winning their consent to partake in the interview session.

Sample Size and Sampling Techniques

Choosing an appropriate size is crucial to have a study that will provide statistically significant results. Research needs to be cost-effective, so it is best to use as small a sample as possible to reduce cost and time (Singh & Masuku 2014). However, using too small a sample will not attest to statistical credibility (Elo et al., 2014). For this study, an appropriate sample size estimate was used by the researcher considering cost and available time and is gotten with the formula described as equation 1. The demographic characteristics of the study respondents are well described in Table 1. The sample size is a research term used for defining the number of individuals included in a research study to represent a population (Kibuacha, 2021), and is also broken down into sub-groups by demographics such as age, gender, etc. so that the total sample achieves represents the entire population.

$$\text{Sample size} = \frac{(Zscore)^2 * Std\ Dev * (1 - Std\ Dev)}{(Confidence\ Interval)^2} \quad (1)$$

Where, at 95% confidence level, the Z Score = 1.96, standard deviation =.5, taking the confidence interval (margin of error) to be 9%, then sample size = $\frac{(1.96)^2 * 0.5 * (1-0.5)}{(0.09)^2}$ = 119

Table 1. Demographic Characteristics of the Study Respondent and Case Firms

Demographic attribute	Number of respondents
Age	
30-40	53
41-50	38
51-above	29
Gender	
Male	107
Female	13
Highest educational qualifications	
Bachelor's degree	68
Postgraduate degree	38
Others	14
Years of experience	
5-10	69
11-20	32
21- Above	19
Building developers	5
Quantity Surveyor	17
Architects	28
Building contractors	22
Project managers	29
Property owners /Clients	19
Firms size (number of employees)	
1-100	104
101-500	16

In the second phase of the study, a typical of the interview questions used in the qualitative study was adapted as a questionnaire, but now with fixed responses (hypotheses). The adapted questionnaires were issued to the targeted respondents, the key construction practitioners, with a good record of practice in the industry in the State (Project managers, Architects, Quantity surveyors, Engineers, building developers, building contractors, and property owners/clients). The contention in this second phase of the study was to quantitatively measure each of these generated hypotheses in all the question categories as shown in Table 3 to validate the ones with the highest influence in percentage to allow the generalization of ideas. The open-ended interview questions were as follows:

Table 2. Open-Ended Interview Questions

S/N	*Open-ended Interview questions*
Q1	When did the topic of sustainability first appear in your organization's management?
Q2	How has your organization's business model changed as a result of sustainability?
Q3	What drives the client's choice of the building? Assess your own judgment.
Q4	What are the EIA statutory bodies doing to ensure that the stipulated guidelines are enforced in a construction environment?
Q5	What are your judgments as it concerns green buildings gaining the required recognition among construction key players?
Q6	In what ways have the green growth strategy plans by the government made visible and measurable?
Q7	What are the measures in place to check-mate toxicity levels or to treat most of the construction materials used, and generated on sites?
Q8	What do you believe is the status of sustainability on the agenda of your organization's top management?
Q9	In general, how do you believe your organization's sustainability-related actions/ decisions have affected profitability?
Q10	How often are symposiums, seminars, and conferences being conducted by various construction key players on ways of preserving and maintaining nature's choice for our environment?

RESULTS

The indicative findings from the research are followed based on the order of the earlier stated methods. Firstly, the hypotheses generated across question categories reveal a fine blend of responses. The individual responses to the questions were correlated and grouped, to make up the categories of hypotheses, and by so doing; these hypotheses were generated across all the question categories. The correlated responses to the open-ended questions were tabulated below in Table 3.

Table 3. Correlated Responses to Open-Ended Questions

QUESTIONS	CATEGORIES Response to the question
1. When did the topic of sustainability first appear in your organization's management?	(a) 1990. (b) 1998. (c) 2010. (d) 2013.
2. What are the practical attributes	(a) Green architectural designs.

	your organization considers most as part of sustainability plans while constructing commercial buildings?	(b) Cost-effectiveness and optimum utilization of resources (c) Improved renewable energy technology (d) Appropriate waste treatment and management.
3.	**How has your organization's business model changed as a result of sustainability?**	(a) Not much has changed (b) Much change has been instituted in the operations and in resource utilization processes. (c) An active change in areas of proper waste management and whole life cycle consideration during project design
4.	**What drives the client's choice of a building? Assess your own judgment.**	(a) green building (b) low-cost building (c) demand (d) available expertise
5.	**What are the EIA statutory bodies doing to ensure that the stipulated guidelines are enforced in the construction environment?**	(a) Not many efforts from EIA statutory bodies. (b) The EIA statutory bodies are proactive in enforcing compliance.
6.	**What are your judgments as it concerns green buildings gaining the required recognition among construction key players?**	(a) Gradually gaining recognition both in the private and in the public sector. (b) Not gaining the expected recognition as most people are still naïve about its benefits. (c) Fast gaining recognition among private institutions.
7.	**In what ways have the green growth strategy plans by the government made visible and measurable?**	(a) They are virtually non-visible and measurable. (b) The plans were to an extent made visible, but lacked appropriate measurement criteria. (c) The plans are visible and measurable
8.	**What are the measures in place to check-mate toxicity levels or to de-toxicate most of the construction materials used, and generated on sites?**	(a) Integration of various biological and chemical treatments. (b) Carting away of material deposits/ residuals. (c) Recycling and the reduction of gases that causes greenhouse effect by encouraging afforestation around the construction site.
9.	**What are the greatest benefits to your organization in addressing sustainability?**	(a) Expertise recognition among other building/construction firms. (b) Development of a realistic workforce with a conservative mindset. (c) Increased profit margin and improved demand for services. (d) Risk containment.

10. What do you believe is the status of sustainability on the agenda of your organization's top management?	(a) High rank (b) Moderate (c) Low rank
11. In general, how do you believe your organization's sustainability-related actions/ decisions have affected profitability?	(a) Adherence to the practice has triggered a steep decline in profit margins. (b) Sustainability-related actions/ decisions have not affected profitability.
12. In what ways have sustainable practices caused your company to increase its collaboration with any other organizations?	(a) In areas of technological transfer. (b) Competitive atmosphere for continuous improvement and special functions. (c) In areas of waste and renewable energy management. (d) Development of appropriate workforce and needed human capital.
13. What drives the developer's interest in the building?	(a) Improve social responsibilities. (b) Improving natural ecosystems. (c) Improving natural ecosystems and increased economic recompense. (d) Technological realities.
14. What is the state of the national promulgated Environmental laws and policies in preserving the nation's natural ecosystem?	(a) dormant (b) fairly active (c) Very active.
15. What are the discouraging factors of embarking on green building among construction players?	(a) High initial cost. (b) Unavailability of relevant construction materials. (c) Availability of the required expertise/ human capital.
16. How often are symposiums, seminars, and conferences conducted by various construction key players on ways of preserving and maintaining nature's choice of our environment?	(a) very often (b) often (c) rarely

Responses accrued from the administered questionnaire were subjected to further descriptive analysis to portray a representative fraction of the population's sustainability outlook. From the documented responses it can be absorbed that the topic of sustainability became popular in recent times; the last decade has experienced a rapid upsurge in the knowledge of sustainability principles owing mainly to the alarming rate of degradation of major environmental systems. The depletion of forest reserves, incessant mining of soil in major cities for the production of earth blocks, and notorious defacing of surface and groundwater resources were major activities notable in rural, peri-urban and some urban cities of Nigeria during the pre-2010 period. Results depicted in Figure 1(a) show that sustainability issue became a crucial issue in 2010 (16.6%), this may be due to the increasing challenge caused by the

aforementioned problems. In 2013, most organizations became fraternized with ethics and this can be attributed to the rising call for the sustainability doctrine as can be witnessed in the formulation and adoption of more environmentally flexible, cost-effective and risk-curtailed construction techniques; this will continue to rise in the future as presently implementation is already yielding positive results.

Construction of a building involves decision-making that hovers over the choice of nature of architectural design, cost and resource flexibility, energy flexibility and waste management techniques. These key areas were employed during the survey to understand and define the present focal point of principle in the Nigerian environment. Responses obtained (Figure 1b) show that 16.6% of respondents agree to the green architectural design being the focus of firms in the construction sector, 50% agree to the flexibility of construction costs and materials, 16.6% agree to an improved energy and 16.6% to appropriate waste management. From responses, it can be noted that the majority response opted for the costs and material flexibleness; construction firms generally aim for a good profit margin after completion of work and any technology that allows for this will readily be adopted. In Nigeria, construction projects are increasingly becoming competitive; most clients now devise strategies of minimizing the costs of project by calling for bids, hence, making a winner to adopt most economical but efficient construction strategy (figure 1f). Other options such as energy, waste management and green design may be considered after achieving flexibility in cost.

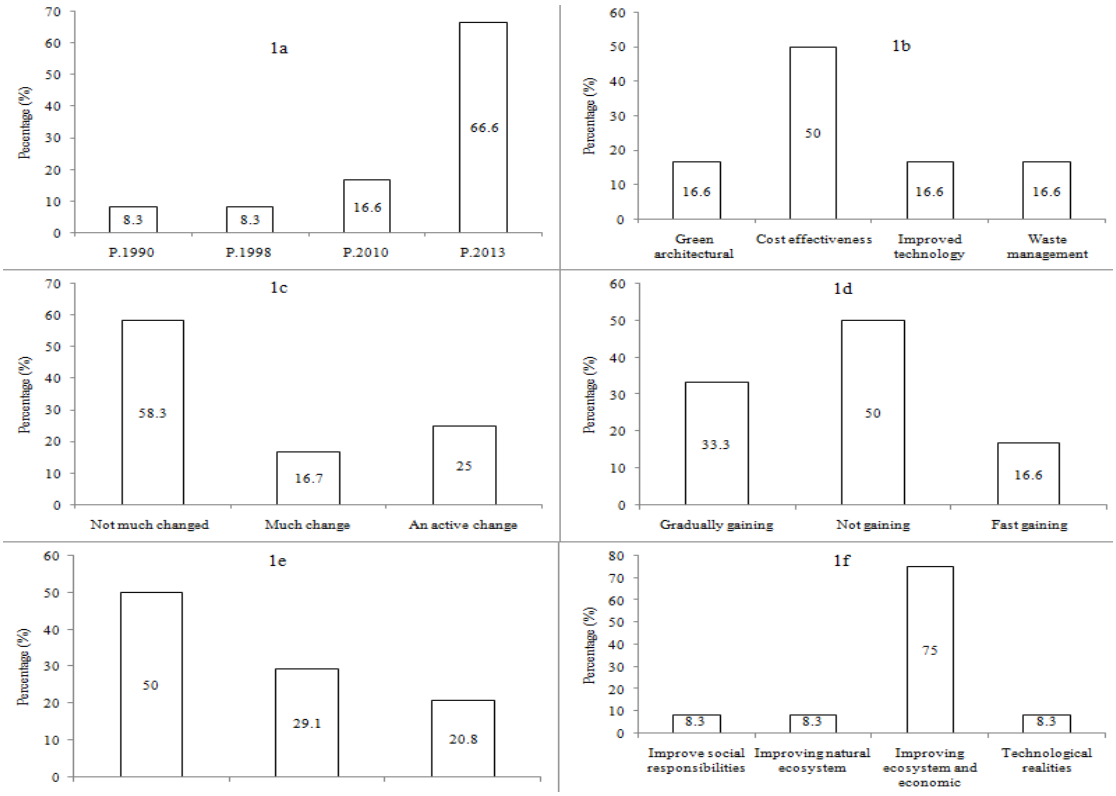

Figure 1: Survey result showing respondent's view on (a) exposure to sustainability; (b) organization sustainability focus; (c) effect on the business model; (d) recognition of green building; (e) sustainability seminars, symposiums and workshops; (f) developer's interest in building

A critical appraisal of the effect of sustainability on the organization's business model shows that the majority of organizations are of the opinion that principle hasn't impacted much on organization activities (figure 1c), this can be attributed to the indifference of players to the principle; sustainability principle being a new concept in the Nigeria construction sector, demands constant awareness through organization of seminars, conferences and symposiums. Recognition of sustainability ethics and principles by the private and public sectors has been pegged at 49.9% (figure 1d), recognition of this principle is on the increase in private firms (16%) perhaps due to the profit drive of these firms. Government firms and institutions need to step up the campaign on the sustainability concept as this will help in improving profit margins alongside a favourable environment and climate. (Figure 1(e), shows that awareness programs are presently been intensified, most organizations and institutions now nominate staff members to programs with a view to establishing the basis in firms. 79.1% of key players in the industry agree to this fact, while 20.8% seldom attends seminars and/or conferences on the issue. It is also expected that this value will increase arithmetically as exposure becomes more pronounced as witnessed in figure 1(a).

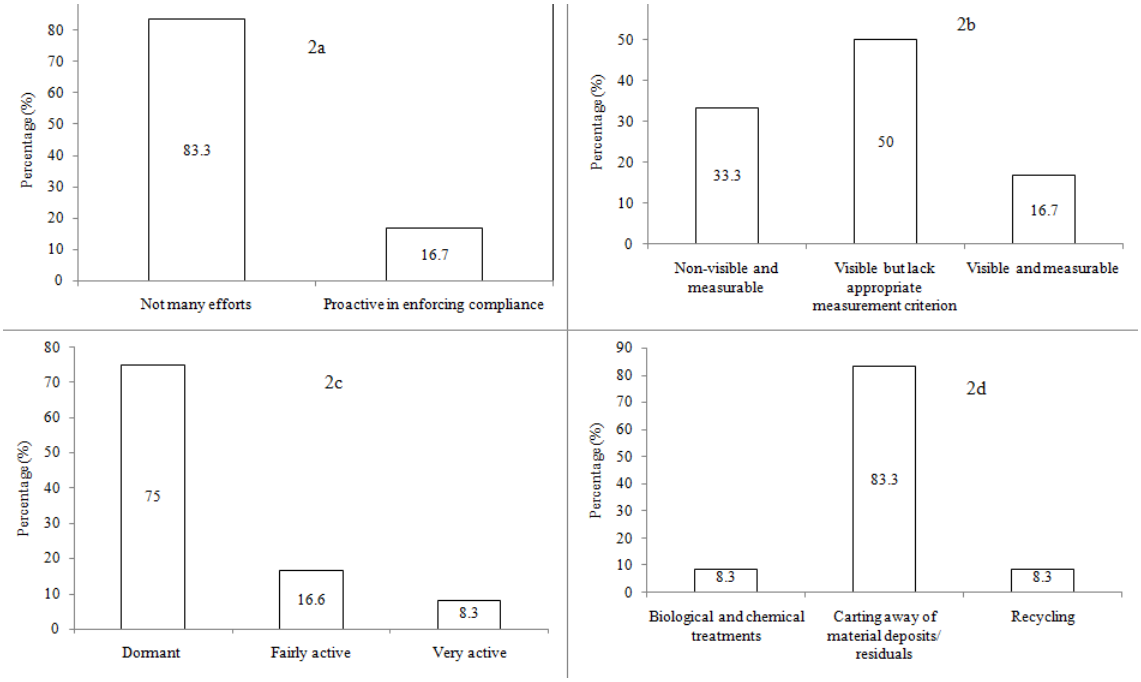

Figure 2: Survey result showing respondent's view on (a) the role of EIA statutory bodies; (b) measuring visibility and acceptance; (c) state's environmental laws and policies; (d) toxicity level check on construction materials on sites

Policy and guidelines formulation by national and international agencies have seen and made the implantation of sustainability possible. Standards and codes bordering on the quality of construction material manufacturing and installation, waste management guidelines, down-to-work environmental ethics and safety standards have positively impacted the acceptance of this doctrine. A major challenge in Nigeria today is the enforcement of laws, Nigeria as a

nation has formulated and enacted laws but most of these laws are not enforced due to the very weak or no enforcement agencies and/or agents, the weak or no courts to check defaulters of this laws has led to an incessant rise in impunity and/or indifference. From survey results, 83.3% agree that enforcement of EIA laws is non-existence (figure 2a, 2c), this can be reviewed to ensure a better environment. From Figure 2(b), 50% of laws guiding the environment lack appropriate measurement criteria, this may be partly attributed to the faulty/ poor standard and nature of research institutions in the country. Constant review of the environment by such institutions will lead to better awareness and enforcement of such laws; the government need to focus on specialized research and development institutions which will always provide ready-to-scrutinize information on specialist materials and techniques in various fields.

Construction of green cities in the various Nigerian states is on the rise, and afforestation projects have been in motion, especially in arid regions in the country (Figure 2b), but these activities need to be extended to other regions, rural and peri-urban settlement in the country. Most construction management technique employed for the reduction of onsite waste has been reviewed by respondents to ascertain which is mostly employed during construction techniques. The use of biological and chemical treatment systems for the remediation of waste, removal of rubbish from the site, and recycling was among the waste management options the respondents were provided with. From the survey results, it can be noted that most of the waste generated onsite is done, by carting away from the site (Figure 2d). Pebbles, boulders, broken blocks, wood, steel/ iron etc. are usually removed from a construction site to adjourning sites or are sold off or discarded as the case may be. Construction works of larger magnitude may provide for residential facilities for which may be linked to a sewage treatment work like an anaerobic digester or a waste stabilization pond. This has a sole aim of protecting the water bodies from pollution. Similar technology was noted to be 8.3% while recycling by afforestation was noted to be 8.3% also.

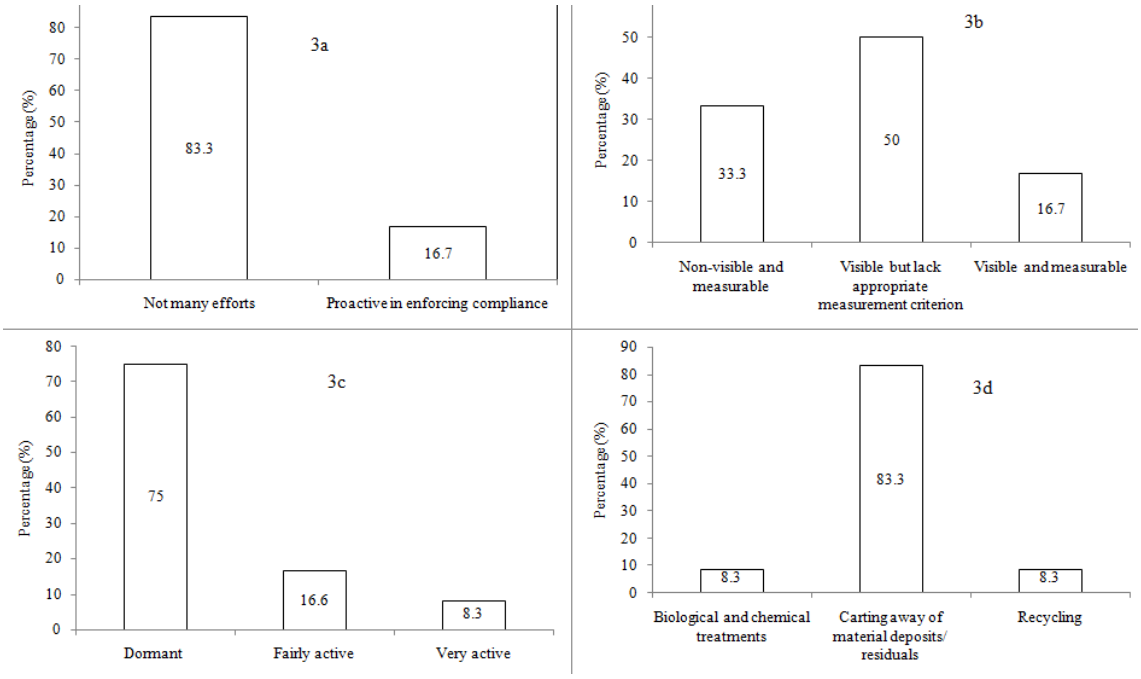

Figure 3: Survey result showing respondent's view on (a) sustainability benefit to organizations; (b) sustainability-related actions on profitability; (c) sustainability-induced collaboration; (d) demerits of embarking on green building

For more than a decade now, sustainability in Nigeria has been a gospel of necessity; a further examination of its presumed benefit was studied by considering the impact on an organization's image aggravation, consolidation of a realistic workforce, impact on profit margin and risk containment. Results obtained from the survey show that risk containment has the highest response of 50% (figure 3a); respondents agreed that the sustainability concept curtails financial risk, construction risk, environmental risk, and health risk amongst others. This result is reasonable as all developers and key players in the industry will place the aforementioned items at the highest echelon of the decision process. From Figure 3(b), it can be noted also that adherence to practice has led to an increase in profit margin as 83.3% agree; this agrees with the previous resolution on practice effect on risk containment. 25% of respondents noted that it increases the status of professionalism; this further revealed that with time, there may be a steady increase and acceptance of the principle. On the effect of practice on collaboration, it can be noted from Figure 3(c) that this practice has fostered collaboration through technological transfer (16.7%), research and developmental functions (8.3%) and waste management (41.6%). On the issue of waste and renewable energy management, collaboration mostly arises during the installation of waste and energy systems. Construction firms mostly subcontract the installation of specialist services to specialist companies and firms, this brings about said collaboration.

Summarily, there are factors militating against the achievement of green building technology amongst key players in the industry. One very important factor is the high initial cost of technology/ practice. Most respondents (75%) (Figure 3d), agrees that employing this practice does have a very high initial

cost, costs may be attributed to the adoption of environmentally friendly construction techniques, waste management technique and technology amongst others. It must be noted that an ideal construction practice needs to be a workable cost plan and technology that spans into the future and is not only limited to the present. With the knowledge of the future in mind, key players in the sector need to employ resources and make decisions based on the future flexibility of the proposed project as this will help in the successful implementation of the needed practice.

CONCLUSIONS AND RECOMMENDATIONS

From the study, knowledge of sustainability principles is still perceived with a lot of misguided perceptions, as most of the construction practitioners in the state still indulge in conventional practice. However, a peak set of responses from the respondents acknowledged incorporating the concept into their management decisions, but with a more resolute interest in economic recompense. It is an obvious deduction from the study that many awareness campaign becomes inevitable as most clients' choice is still on low-cost building, over green building advantages, which has more balanced benefits across the three fundamentals of healthy sustainable development. The statutory bodies whose obligations were to effectively implement the environmental impact assessment (EIA) principle in the construction environment are found dormant and recessive in exerting their functions. The environmental laws and policies in the State are not formidable enough to deter mass exploitation of the natural ecosystem. It will take a whole lot of discipline, uncompromising government policies, heated awareness campaigns, ethical consideration, professionalism, deemed expertise, and green technological adherence, to achieve a sustainable goal in constructing a commercial building in the State.

In some developed economies, the promotion of sustainable construction for sustainable development has been a major part of government policy and recognizes economy, environment and social well-being as interdependent tri-sustainability concepts have been a vital development concept that needs attention and need to be addressed properly in the country. As a prime construction strategy, the concept often starts from the innovation stage and extends all through the life cycle of a given project. In green construction, all the stages involved in the project are accounted for in ways that promote energy, water, and material efficiencies, while providing healthy, productive, and long-term benefits to owners, occupants, and society at large. It is vital for the Nigerian construction industry to actively promote and provide support to the implementation of sustainability through the most significant confirmed strategies (Akindele et al., 2023).

FURTHER STUDY

Due to budgetary and time constraints, the survey was designed to capture only one hundred and nineteen (119), thus heightened the margin of error by 9 % which could be reduced with an increased sample size. Secondly, a total of one hundred and twenty (120) questionnaires were administered among the selected clusters/respondents, eighty-nine (89) were correctly filled and

returned, twenty-one (21) of the questionnaires were not returned by the respondents, and ten were wrongly filled and discarded. In the end, only eighty-nine was used for the analysis, thus widening the earlier designed error margin a bit above the earlier stated nine per cent (9%). It is our recommendation that the population size of the respondents to be used in future related studies be increased to a sizeable number so that the margin of error will be made insignificant.

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