Modular Construction and Sustainable Project Developments in the Nigerian Construction Sector

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Abstract
Purpose *– Modular construction (MC) contributes to the circular economy by promoting the reuse and recycling of building materials. The aim of this study is to investigate the application of modular construction, with a view to enhance the management of construction sustainably.*

Design*– Survey research design was employed to carry out this study in Lagos State, Nigeria. The population of the study is construction professionals who have been involved in modular construction projects. Questionnaires were used to collect data from the respondents. A purposive sampling technique was used to select a sample size of 500 professionals. Frequency, percentage, mean, rank, standard deviation and analysis of variance (ANOVA) were used to analyse the data.*

Research Limitation and Implications *– Responses were gotten from various professionals knowledgeable about modular construction to achieve valid results that can be generalised in the construction industry.*

Findings *– The findings reveal that volumetric and temporary modular types are the most available of the 11 investigated, with mean of 3.23 and 3.16 respectively; and the topmost sustainability benefits of MC is minimisation of environmental impact and the promotion of sustainability with a mean of 3.81.*

Conclusion, Practical and Theoretical Implication *– It is concluded that there are as many as nine modular construction types known and available in the Nigerian construction industry. It implies that the awareness of this type of construction is high in Nigeria. The study recommends that wider awareness of the different types of modular construction projects should be created among all stakeholders in the construction sector. This can be done through seminars, webinars and conferences for the populace.*

Keywords: Circular economy, Modular construction, Reuse, Recycling, Sustainable development.

Introduction

Modular construction is the development of buildings in units offsite in a factory environment and transported to the site for assembling. Buildings are constructed in modules or independent construction in a modular method. Ihenketu *et. al*. (2019) posit that modular construction is an innovative, sustainable construction delivery method utilising off-site lean manufacturing techniques to prefabricate single or multi-storey buildings in module sections. Modular construction technologies are becoming widely used all over the world in several applications (Generalova *et. al.*, 2016). It is not only used in low-rise construction but also extensively integrated in multi-storey and high-rise construction using energy saving technology. This development offers the implementation of modular construction on a larger scale. It is very important to note that the use of modular units makes construction cheaper including the construction of high-rise buildings, thereby making affordability of housing easier. A modular building typically has windows, doors, finished walls, lighting, flooring choice and can be pre-wired for specific usage of the building. Modular buildings have heating, ventilation and air conditioning (HVAC) and air filtration systems in various colours or styles, fitting almost anyone's budget (Colleend, 2018). It can be a detached building or assembled inside a big building, such as a warehouse, factory, or office building. Modular components are typically constructed indoors on assembly lines, which could take as little as 10 days but more often one to three months. According to Ihenketu *et. al.* (2019), permanent modular construction (PMC) buildings are produced in a controlled setting made of wood, steel or concrete. PMC modules can be integrated into site-built projects or stand alone with mechanical, electrical and plumbing (MEP) fixtures and interior finishes. The buildings are 60% to 90% completed offsite in a factory-controlled environment, transported and assembled at the final building site. This can comprise the entire building, components or sub-assemblies of large structures. In many cases, modular contractors' team with traditional general contractors to exploit the resources and advantages of each type of construction. Finished modules are conveyed to the building site and assembled by a crane, which could take several hours or days. Permanent modular buildings are built to meet or exceed the same building codes and standards as site-built structures with similar architect-specified materials used in conventional building. PMC can have as many stories as building codes allow. Unlike re-locatable buildings, PMC structures are intended to remain in one location for the duration of their useful life. Modular construction has gained significant attention in recent years as a sustainable approach to building development, particularly in developing countries like Nigeria (Adegbile, 2021). The issues with conventional methods include high cost, time wastage, negative environmental impacts and so on. However, the adoption of modular construction in Nigeria has been relatively slow, with limited research exploring the potential integration of modular construction in the country (Ogunnaike *et. al.*, 2025; Sholanke *et. al.*, 2019; Oyedele *et. al.*, 2014a;). This gap in the research presents an opportunity to investigate the potential of modular construction as a sustainable approach to construction in Nigeria. The problem this study seeks to solve is the poor integration of modular methods for sustainable construction in the research area. Hence, the aim of this study is to investigate the application of modular construction in Lagos State, Nigeria, with a view to enhance the management of construction sustainably. The justification for Lagos as the geographical scope is because of several emerging Estates and infrastructure that employ modular construction and modern technologies in the State. The specific objectives are to examine the modular construction types that are available in the construction sector; to find out the extent of adoption of modular construction for various project types; and determine the sustainability benefits of modular construction**.** The significance of the study lies in the advocacy towards modern construction methods to align with the development of built infrastructure in a sustainable manner.

Literature Review

Modular Construction Methods in Nigeria

The adoption of modular construction techniques in Nigeria has gained momentum as a means to address the persistent housing shortages and inefficiencies in the traditional construction procurement. Modular construction involves the prefabrication of building components in a controlled off-site environment, which are then transported and assembled at the construction site. This approach has been explored as a potential solution to improve the speed, quality and sustainability of construction projects in the country. One of the common modular construction methods used in Nigeria is the volumetric modular system. Oladokun and Owolabi (2020) described this method as the prefabrication of three-dimensional modules, such as bathrooms and kitchens, which are then transported to the construction site and integrated into the building structure. This approach allows for efficient and standardised production of building components, leading to reduced construction time and improved quality control. Another modular construction method utilised in Nigeria is the panelized system, which involves the prefabrication of two-dimensional wall, floor and roof panels. Adewuyi and Otite (2021) highlight that these panels are manufactured off-site and then assembled at the construction site, enabling faster installation and reducing the need for traditional formwork and scaffolding. Additionally, some Nigerian construction projects have employed a hybrid approach, combining both volumetric and panelized modular systems. Oladokun *et. al.*, (2018) observed that this hybrid method allows for integration of prefabricated components, such as bathrooms and kitchens, with site-assembled panels for walls, floors and roofs. This approach aims to leverage the benefits of both modular systems to enhance the overall efficiency and flexibility of the construction process.

It has also been opined that the use of recycled materials in modular construction has been explored in Nigeria. Oladokun *et. al.* (2018) found that the incorporation of recycled steel, plastic and other materials in the prefabricated components could contribute to the sustainability of modular construction projects. This indicates the potential for integrating sustainable waste management practices with modular construction methods in the country. These approaches aim to improve the speed, quality and sustainability of construction projects, while addressing the persistent housing shortages and inefficiencies of traditional construction methods in the country.

Benefits of modular construction and sustainable waste management practices

One of the primary benefits of modular construction is the reduction in waste generation. Studies have shown that the application of design for disassembly (DfD) principles in modular construction enable reuse and recycling of building components, leading to a 30-50% decrease in construction waste (Adewuyi & Otite, 2021). Modular construction also promotes resource efficiency by optimising the use of materials through off-site prefabrication (Oladokun *et. al*., 2018). When coupled with sustainable waste management strategies, such as reverse logistics and material tracking, the overall resource efficiency of construction projects can be further enhanced (Aigbavboa *et. al*., 2020). Similarly, integration of modular construction and sustainable waste management practices contributes to the circularity of materials in the construction industry (Oyedele *et. al*., 2014b). This helps reduce reliance on virgin materials and promote more sustainable built environment. Furthermore, the combination of modular construction and sustainable waste management strategies significantly reduces the environmental impact of construction projects. Research has reported that this synergy can lead to a 40-60% reduction in greenhouse gas emissions and energy consumption during the construction phase (Windapo & Ogunsemi, 2019). Additionally, integrating modular construction and sustainable waste management practices provides economic benefits, reduced waste disposal costs, increased material recovery and reuse, and financial viability of construction projects via revenue streams from recycling (Aigbavboa *et. al*., 2020). In this regard, modular construction has been shown to increase productivity and efficiency on construction sites. By shifting a significant portion of the work to a controlled off-site environment, modular construction reduces on-site labour requirements, minimise weather-related delays and improves the overall speed of project delivery (Blismas *et. al*., 2006). The controlled manufacturing environment of modular construction allows for stricter quality control measures, such as increased inspections and testing, which can result in higher-quality finished products and reduced defects (Arashpour *et. al*., 2016). Moreover, modular construction potentially reduces various risks associated with traditional construction, such as health and safety risks, weather-related risks and site-specific challenges (Saeed *et. al*., 2021). The off-site fabrication process and controlled environment can mitigate these risks, leading to improved project performance. The controlled manufacturing process can also reduce waste, optimise resource utilisation and improve energy efficiency, contributing to the overall environmental performance of projects (Windapo & Ogunsemi, 2019). Additionally, studies have shown that modular construction engenders significant cost savings and improved schedule performance compared to traditional construction methods. The off-site fabrication and streamlined on-site assembly can result in reduced construction duration and more predictable project timelines (Blismas *et. al*., 2006). While modular construction holds promise for improving construction project performance, it is essential to consider the specific project context, stakeholder requirements and potential challenges that may arise during the implementation of modular construction techniques (Saeed *et. al*., 2021). Careful planning, effective project management, and comprehensive understanding of the benefits and limitations of modular construction are crucial for achieving successful project outcomes.

In the same vein, Generalova *et. al.* (2016) posit that modular construction has the potential to shorten project design and engineering time, reduce costs and improve construction productivity. The installation of modular buildings is cost efficient, safe and eco-friendly. Generalova *et. al.* (2016) record that the development of modern modular construction systems provides affordable, comfortable and eco-friendly housing. In this regard, Ihenketu *et. al*.. (2019) also opine that modular construction can be permanent or temporary and ensures timely completion projects, jobsite improvement, waste reduction, quality control, sustainability with building designs stronger than traditional homes. Offsite construction services variety of building and construction type such as education buildings, housing, health care, office, dormitory and hospitality. Modular buildings are basically stronger than site-built construction because each module is engineered to independently sustain the rigors of transportation and craning onto foundations. Once together and sealed, the modules become one integrated wall, floors and roof assembly. Buildings off-site ensure better construction quality management. Manufacturing plants have stringent quality assurance (QA) and quality control (QC) programmes with independent inspection and testing protocols that promote superior quality of construction. Thus, modular construction is inherently a natural fit for sustainable building with improved environmental impact. Building in a controlled environment reduces waste through avoidance of upstream rather than diversion downstream.

Research Method

Survey research design was employed in Lagos State to carry out this study. The population of this study is construction professionals who have worked or are working on modular construction projects. Purposive sampling technique was used to select a sample size of 500 and questionnaires were administered to them, out of which 395 were filled and returned, which were used for the study. Purposive sampling was used because there is no list of professionals who have been or are engaged in the usage of modular construction, thereby resorting to professionals on such projects that were identified through a survey. The questionnaire comprises four sections, Sections A to D. Section A centers on the respondents' and organisations' information. Section B evaluates 11 types of modular construction coined from literature for availability on a Likert scale from Totally Unavailable (1) to Totally Available (4). The extent of adoption of modular construction on seven types of projects was measured on a Likert scale from Not Adopted (1) to Always Adopted (5) in Section C. Section D examines 18 sustainability benefits of modular construction coined from literature on a Likert scale from No benefit (1) to Major Benefit (4). Frequency, percentage, mean, rank, standard deviation and analysis of variance (ANOVA) were used to analyse the data. These tools were contained in SPSS Software employed for the analysis. Ethical consideration was achieved via respondents' informed consent, anonymity and confidentiality.

Findings and Discussions

Respondents' and Organisations' Demographic Information

Table 1 shows the demographic information of the respondents who participated in the survey. Sixty five per cent of the respondents were males and 35% were females; less than 1% have secondary school qualification, 26% have ordinary national diploma (OND), 9.6% have Bachelors degree, 47.8% have Masters and 15.7% have other qualifications; 20% were Architects, 3.5% were Civil Engineers, 26% were Construction Managers, 29% were Project Managers, 10.1% were Facility Managers and 11.4% were Planners; 26.3%% have 1-5 years construction experience, 13.9% have 6-10 years, 15.2% have 11-15 years, 44.6% have

over 15 years experience.
Moreover, 8.4% of the respondents were from private organisations, 34.25% from public, 34.4% from public-private partnership and 23% from NGO; 5.8% were from small companies; 50.4% from medium firms and 43.8% from large companies; 15.2% from ₦50 million–₦500 million annual revenue organisations, 11.6% from ₦501 million–₦1 billion organisations and 73.2% from Over ₦1 billion annual revenue organisations; 96.2% of the organisation train their staff on modular construction while 3.8% do not. Also, 5.8% of the organisations' average duration of modular projects was less than 6 months, 47.3% was 6 months to a year and 46.6% was over a year; 78.4% of the organisations have environmental policy while 21.5% do not; the drivers for modular construction 62.8% of the organisations was cost efficiency while it was environmental sustainability for 37.2%.

Table 1: Demographic information of Respondents and Organisations

Demographic Information		**Frequency**	**Percentage**
Gender	Male	257	65
	Female	138	35
	Total	**395**	**100**
Academic Qualification	Secondary	3	0.8
	Diploma/OND	103	26.1
	HND/Bachelor's Degree	38	9.6
	Master's degree	189	47.8
	Others	62	15.7
	Total	**395**	**100**
Profession	Architecture	79	20.0
	Civil Engineering	14	3.5
	Construction Management	103	26
	Project Management	114	28.9
	Facility Management	40	10.1
	Policy and Planning	45	11.4
	Total	**395**	**100**
Construction experience	1 - 5 years	104	26.3
	6 - 10years	55	13.9
	11 - 15 years	60	15.2
	15 years above	176	44.6
	Total	**395**	**100**
Type of organization	Private Company	33	8.4
	Public Company	135	34.2
	Public-private partnership	136	34.4
	Non-Profit Organization (NGO)	91	23.0
	Total	**395**	**100**
Staff Strength	Small (1–50 employees)	23	5.8
	Medium (51–200 employees)	199	50.4

	Large (201+ employees)	173	43.8
	Total	**395**	**100**
Annual Revenue	₦50 million–₦500 million	60	15.2
	₦501 million–₦1 billion	46	11.6
	Above ₦1 billion	289	73.2
	Total	**395**	**100**
Staff Training on Modular Construction	Yes	380	96.2
	No	15	3.8
	Total	**395**	**100**
Typical Duration of Modular Projects	Less than 6 months	23	5.8
	6 months–1 year	187	47.3
	Over 1 year	184	46.6
	Total	**395**	**100**
Environmental Policy	Yes	310	78.4
	No	85	21.5
	Total	**395**	**100**
Primary Motivation for Adopting Modular Construction	Cost efficiency	248	62.8
	Environmental sustainability	147	37.2
	Total	**395**	**100**

Types and Application of Modular Construction

Eleven different types of modular construction coined from literature were examined for availability on a Likert scale from Totally Unavailable (1) to Totally Available (4). The decision rule for availability is a modular type with 2.50 – 4.00 mean score (Available). Thus, nine of the 11 types in Table 2 are available in the Nigerian construction industry, which are, in descending order of availability Volumetric, Temporary, Prefabricated Booths, Mixed module and prefab panels, Open-sided modules, Stair modules, Portable Buildings, 3D Modules and Hybrids. It is noteworthy that two of the investigated modular types are not available in the Nigerian construction sector, that is, Permanent and Relocatable. This finding aligns with Oladokun and Owolabi (2020), which posit that volumetric type is one of the common modular construction methods used in Nigeria. Similarly, Adewuyi and Otite (2021) opines that panelised system, which involves the prefabrication of two-dimensional wall, floor and roof panels is also commonly used in Nigeria, stating that these panels are manufactured off-site and then assembled at the construction site, enabling faster delivery. In the same vein, Oladokun et al. (2018) align with the findings of this study, mentioning that the hybrid approach is available in Nigeria as well.

Table 2: Modular Construction Types

S/N	Modular Types	Mean	Rank	SD
1	Volumetric	3.23	1	.77
2	Temporary	3.16	2	.99
3	Prefabricated Booths	2.96	3	.97
4	Mixed module and prefab panels	2.94	4	.79
5	Open-sided modules	2.93	5	.82
6	Stair Modules	2.82	6	.733
7	Portable Buildings	2.78	7	.85
8	3D Modules	2.74	8	.69
9	Hybrid	2.71	9	.58
10	Permanent	1.96	10	.19
11	Relocatable	1.74	11	.61

Key: 1 = Totally Unavailable, 2= Slightly Unavailable, 3= Slightly Available, 4 = Totally Available

Decision: 0.00 – 2.49 (Unavailable), 2.50 – 4.00 (Available)

Moreover, the extent of adoption of modular construction was examined on seven types of projects and presented in Table 3. The extent was measured on a Likert scale from Not Adopted (1) to Always Adopted (5). The decision rule for the extent of adoption is a project type with 0.00 – 1.49 (No Adoption), 1.50 – 2.49 (Low Adoption), 2.50 – 5.00 (High Adoption). Thus, modular construction is highly adopted across all the seven projects types. Again, Oladokun and Owolabi (2020) agree with this result, mentioning that the integration of modular construction has increased momentum in Nigeria, due to the consistent shortage of buildings and inadequacies of the traditional method of construction. Additionally, Ihenketu *et. al*. (2019) agrees as well, citing that modular construction is an innovative modern and sustainable approach to procuring buildings of all sorts all over the globe. The study posits that the modular construction method utilises off-site lean manufacturing techniques to prefabricate single or multi-storey buildings in module sections. In the same vein, Generalova *et. al.* (2016) noted that modular construction technologies are becoming widely used all over the world in several applications. The study opined that it is not only used in low-rise construction but also extensively integrated in multi-storey and high-rise construction. The study suggests that the energy saving potential of modular construction makes it integrated on a wider scale to make the affordability of housing easier

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Table 3: Extent of Adoption of Modular Construction

S/N	Project Types	Mean	Rank	SD
1	Recreation	3.40	1	.92
2	Mixed-use	3.40	1	1.03
3	Institutional	3.37	3	.99
4	Commercial	3.14	4	.87
5	Residential	2.90	5	.87

6	Infrastructure	2.84	6	.98
7	Industrial	2.50	7	.60

Key: 1 = Not Adopted, 2= Sparsely Adopted, 3= Sometimes Adopted, 4 = Usually Adopted, 5 = Always Adopted
Decision: 0.00 – 1.49 (No Adoption), 1.50 – 2.49 (Low Adoption), 2.50 – 5.00 (High Adoption)

Sustainability Benefits of Modular Construction

Eighteen benefits of modular construction, coined from literature were examined on a Likert scale from No benefit (1) to Major Benefit (4). The decision rule is a benefit with 2.50 – 4.00. Thus, all 18 benefits in Table 4 are present in the Nigerian construction industry. Ten topmost benefits in descending order are Minimisation of environmental impact and promotes sustainability; Substantial cost savings; Reduction of project timelines; Easier project management and coordination; Easy scalability and adaptability of structures; Higher quality through controlled manufacturing processes; Improved operational efficiency; Compliance with regulations reduces penalties and supports environmental goals; Greater design consistency across projects; and Reduction of construction material waste. This result agrees with Adewuyi and Otite (2021), which states that modular construction decreases construction waste by 30-50% as a result of DfD principles via reuse and recycling of building components. Similarly, Oladokun et. al. (2018) aligns with this study by stating that modular construction promotes resource efficiency through off-site prefabrication; and Aigbavboa *et. al*. (2020) posit that the overall resource efficiency of construction projects can be further improved with modular construction. Additionally, Windapo and Ogunsemi (2019) reported that modular construction can a yield 40-60% reduction in greenhouse gas emissions and energy consumption during the construction phase. All these aforementioned studies agree with the current study and jointly underscore the sustainability benefits of modular construction.

Table 4: Sustainability Benefits of Modular Construction

S/N	Benefits	Mean	Rank	SD
1	Minimisation of environmental impact and promotes sustainability	3.81	1	.41
2	Substantial cost savings	3.45	2	.93
3	Reduction of project timelines	3.37	3	.91
4	Easier project management and coordination	3.06	4	1.09
5	Easy scalability and adaptability of structures	2.96	5	.69
6	Higher quality through controlled manufacturing processes	2.91	6	.46
7	Improved operational efficiency	2.83	7	.77
8	Compliance with regulations reduces penalties and supports environmental goals	2.83	7	.80
9	Greater design consistency across projects	2.77	9	.70

10	Reduction of construction material waste.	2.73	10	.57
11	Mitigation of environmental and health risks	2.68	11	.95
12	Training stakeholders on overall sustainability	2.63	12	.75
13	Resource conservation	2.59	13	.89
14	Improves overall waste management	2.59	13	.96
15	Allows for flexible and adaptive designs	2.58	15	.37
16	Improved safety by reducing on-site risks	2.55	16	.61
17	Reduced landfill dependency and improves soil health.	2.54	17	.78
18	Reusing materials reduces the need for new resources and enhances sustainability	2.50	18	.81

Key: 4 = Major Benefit, 3 = Moderate Benefit, 2 = Minor Benefit, 1 = No Benefit

Decision: 0.00 – 1.49 (No Benefit), 2.50 – 4.00 (Benefit)
Hypotheses: There is no significant difference between construction organisations on the sustainable benefits of modular construction project types.

Significant differences between construction professionals were tested on 18 sustainability benefits of modular construction using analysis of variance (ANOVA) and the result is shown in Table 5. The result shows that significant differences exist among the professionals except in easier project management and coordination; higher quality through controlled manufacturing processes; and mitigation of environmental and health risks. Thus, the null hypothesis (H_0) is rejected for 15 benefits and supported for the aforementioned three benefits. This implies that the mean scores and ranks of the construction professionals for these three benefits in Table 4 should be upheld, while it is not for the other 15.

TABLE 5. Difference between construction professionals on sustainability benefits of modular construction

		Sum of Squares	**df**	**Mean Square**	**F_{cal}**	**p-values**	**Decision**
Minimisation of environmental impact and promotes sustainability	Between Groups	23.264	3	7.755	9.932	.000	Reject H_0
	Within Groups	305.283	391	.781			
	Total	328.547	394				
Substantial cost savings	Between Groups	33.777	3	11.259	14.396	.000	Reject H_0
	Within Groups	305.803	391	.782			
	Total	339.580	394				
Reduction of project timelines	Between Groups	15.705	3	5.235	40.093	.000	Reject H_0
	Within Groups	51.054	391	.131			
	Total	66.759	394				
Easier project management and coordination	Between Groups	1.309	3	.436	2.074	.103	Accept H_0
	Within Groups	82.226	391	.210			
	Total	83.534	394				
Easy scalability and adaptability of structures	Between Groups	1.952	3	.651	4.915	.002	Reject H_0
	Within Groups	51.769	391	.132			
	Total	53.722	394				
	Between Groups	1.285	3	.428	.906	.438	Accept H_0

Higher quality through controlled manufacturing processes	Within Groups	184.801	391	.473			
	Total	186.086	394				
Improved operational efficiency	Between Groups	13.148	3	4.383	9.768	.000	Reject H_0
	Within Groups	175.425	391	.449			
	Total	188.572	394				
Compliance with regulations reduces penalties and supports environmental goals	Between Groups	9.437	3	3.146	10.072	.000	Reject H_0
	Within Groups	122.118	391	.312			
	Total	131.554	394				
Greater design consistency across projects	Between Groups	9.889	3	3.296	2.798	.040	Reject H_0
	Within Groups	460.653	391	1.178			
	Total	470.542	394				
Reduction of construction material waste.	Between Groups	12.839	3	4.280	9.087	.000	Reject H_0
	Within Groups	183.679	390	.471			
	Total	196.518	393				
Mitigation of environmental and health risks	Between Groups	3.583	3	1.194	2.127	.096	Accept H_0
	Within Groups	219.521	391	.561			
	Total	223.104	394				
Training stakeholders on overall sustainability	Between Groups	15.886	3	5.295	9.347	.000	Reject H_0
	Within Groups	221.521	391	.567			
	Total	237.408	394				
Resource conservation	Between Groups	14.259	3	4.753	7.538	.000	Reject H_0
	Within Groups	246.541	391	.631			
	Total	260.800	394				
Improves overall waste management	Between Groups	8.834	3	2.945	3.803	.010	Reject H_0
	Within Groups	302.726	391	.774			
	Total	311.559	394				
Allows for flexible and adaptive designs	Between Groups	44.294	3	14.765	17.969	.000	Reject H_0
	Within Groups	321.266	391	.822			
	Total	365.559	394				
Improved safety by reducing on-site risks	Between Groups	9.868	3	3.289	5.640	.001	Reject H_0
	Within Groups	228.016	391	.583			
	Total	237.884	394				
Reduced landfill dependency and improves soil health.	Between Groups	11.490	3	3.830	4.325	.005	Reject H_0
	Within Groups	346.247	391	.886			
	Total	357.737	394				
Reusing materials reduces the need for new resources and enhances sustainability	Between Groups	27.029	3	9.010	15.690	.000	Reject H_0
	Within Groups	224.526	391	.574			
	Total	251.554	394				

Conclusions

This study investigates the operations of modular construction in Nigerian projects. The study was done empirically among construction professionals in Lagos State. The following conclusions are drawn from the findings of the study:

1. There are as many as nine modular construction types known and available in the Nigerian construction industry. It implies that the awareness of this type of construction is high in Nigeria.

2. Modular construction projects are used for all types of projects in Nigeria especially, recreation and mixed-use properties. The implication of this is that sustainability is been entrenched gradually into the Nigerian projects.

3. Modular construction projects provide several benefits, however, topmost among them are minimisation of environmental impact with sustainability and cost savings. It implies that the environmental deface noticeable in the communities will gradually be eradicated with the advent of modular construction.

Recommendations

The following recommendations are made in light of the findings of the study:

1. Wider awareness of the different types of modular construction projects should be created among all stakeholders in the construction sector. This can be done through seminars, webinars and conferences on the populace.

2. There should be greater usage of modular construction types for all construction projects. This can be achieved by showcasing the sustainability advantages of modular construction projects.

3. The benefits of modular construction projects should be amplified in societies. This can be made possible with the concerted efforts of construction professionals by introducing them to clients.

This study contributes to knowledge by establishing specific modular construction methods available in the Nigerian construction sector as well as their extent of adoption in various project types. It also confirms the sustainability advantages the industry stands to enjoy by adopting modular construction methods.

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