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EXAMINING GREEN ATTRIBUTE PREFERENCES IN RESIDENTIAL BUILDINGS: A STUDY IN KANO, NIGERIA

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Abstract

Green building (GB) encompasses a holistic range of environmentally, socially, and economically conscious features addressing sustainability within building design, including energy efficiency, technological innovations, and materials recycling. Within the realm of housing, these integral green attributes synergistically contribute to the creation of living spaces that are not only environmentally friendly but also energy-efficient, health-enhancing, and comfortable. This comprehensive study investigates the paramount aspect of green building through the perspectives of both the general public and experts, assessing their acceptance and support for green building practices in Nigeria, a strategic choice due to its pivotal role within the Green Building Council in Africa, representing one of seven nations. Employing Factor Analysis and the Relative Importance Index, our rigorous analysis scrutinizes residential developments to pinpoint the most influential green building attribute. Our extensive questionnaire, distributed within the bustling metropolis of Kano, Nigeria, selected for its substantial population size in northern Nigeria and its status as the country's second most populous state, unveils a compelling revelation: social attributes wield the most profound influence over the successful implementation of green building practices, emphasizing their central role in sustainable development initiatives.

***Keywords**:* Green Building, Sustainability, Residential Developments, Social Influence, Factor Analysis, Relative Importance Index

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INTRODUCTION

Green building (GB) is valued for its environmentally friendly, energy-efficient, health-enhancing, and comfortable living qualities (Hu et al., 2014). It comprises three dimensions: environmental, social, and economic, leading to research variations on which aspect gains the most widespread acceptance. Results vary due to regional differences, societal norms, and sustainable development levels, all affecting preferences for specific green building attributes.

Sustainability levels differ globally; for instance, Europe, Asia, and Africa display varying degrees of sustainable development (Said et al., 2014, 2016, 2017a&b, 2020, 2022). African nations often lag in social and environmental development, contributing to CO_2 emissions and environmental issues due to fossil fuel use. Conventional building practices globally exacerbate these challenges, posing a major sustainability issue (Olanrele et al., 2020).

African countries, though not major emitters, contribute to CO_2 emissions due to fossil fuel use, impacting climate change. Limited industrialization and infrastructure development in the region worsens the issue. Conventional building practices are a significant CO_2 source (Park et al., 2010), adding to environmental concerns. Sustainability in construction remains a global challenge, rooted in traditional industry methods (Olanrele et al., 2020). Initiatives like Green Building (GB), introduced by organizations such as the Green Building Council (GBC) in 1987, offer diverse solutions for environmental and societal issues (Michael & Rochelle, 2013).

GB tackles energy efficiency, renewables, water conservation, and materials sustainability via recycling, reuse, and reduction, addressing environmental challenges and promoting global sustainability. Nigeria, a developing nation, established its Nigerian Green Building Council (NGBC) in 2014, affiliated with the World Green Building Council (WGBC).

In Kano, Nigeria, despite an increasing number of luxury buildings and estates, there are no green residential or non-residential structures as per the 2016 GBC report. Nonetheless, Dahiru et al. (2014) noted the potential for green building in Nigeria, considering the region's environmental challenges tied to construction projects. Construction industry professionals have shown support for green building concepts to address these concerns. However, a critical question remains: Do households understand green building concepts, and what are their perceptions and willingness to invest in traditional residential buildings? This research aims to uncover these vital insights.

RESEARCH BACKGROUND

Sustainable Development of Green Buildings

80%+ of households live in traditional buildings, but over 50% of global construction projects lack sustainability. Green Building (GB) emerged to drive sustainable development and combat climate change effects, urging the construction industry and experts to act urgently. This addresses environmental preservation amid threats, including construction activities (Saulius et al., 2013).

Buildings serve as vital habitats, offering shelter and comfort when environmentally conscious in design (Ho et al., 2005). Despite people spending most of their time indoors, they often underestimate construction's adverse effects on the environment and society. Construction carries both positive and negative outcomes, including pollution and waste generation (Ali & Nsairat, 2009). While it enhances spatial structure and infrastructure, acknowledging its impact on a nation's overall development is crucial (Daramola et al., 2014)

Countries with developed infrastructure, whether developed or developing, achieve higher sustainable development levels, benefiting their economy, society, and environment (Nduka & Sotunbo, 2014). The interdependence of these three aspects in sustainability is widely acknowledged (Otegbulu, 2011; Ali & Nsairat, 2009; Ho et al., 2005). Nations like France, the UK, and the USA, with a history of economic development, showcase strong societal and environmental sustainability, making green buildings more popular than conventional ones in the pursuit of environmental sustainability.

Conventional buildings provide limited benefits to the environment, society, and the economy. They contribute to environmental degradation and worsening climate conditions. They are responsible for 20-40% of energy consumption (Chau et al., 2010), 10% of global CO_2 emissions (Park et al., 2012), and over one-third of global greenhouse gases (Romero et al., 2013). These negative effects primarily harm society, endangering well-being and hindering economic growth.

Conventional buildings pose several environmental challenges, including energy inefficiency, poor indoor air quality, emissions, high waste generation, and non-environmentally friendly materials. Poor waste management and insufficient sustainable design practices result in pollution during construction, including air pollution, solid waste, and hazardous materials (Michael & Rochelle, 2013). These pollutants contribute to greenhouse gas emissions and climate change. Additionally, conventional buildings have adverse effects on human health, especially occupants.

The three key dimensions of GB (environmental, social, and economic) have been subjects of research to determine their importance and acceptance levels (Said et al., 2016, 2017, 2020). Additionally, Zuo & Zhao (2014) identified research gaps, categorizing studies based on assessment tools' effectiveness, specific population demands, and future-proofing considerations. Understanding the demand for green buildings is crucial, as preferences depend on desired attributes and the population's willingness to adopt them.

Green Building Attributes

Existing studies on green building, involving various researchers (Ho et al., 2005; Paul & Taylor, 2007; Ali & Nsairat, 2009; Achinicht, 2010; Zalejska-Jonsson, 2012; Kim et al., 2013; Dahiru et al., 2014), have explored its dimensions: environment, society, and economy. They've identified factors emphasizing societal benefits due to green building eco-friendliness, energy efficiency, health, and comfort (Hu et al., 2014). Green building development's success hinges on household perceptions, preferences, and willingness to pay (WTP). These preferences, expressed by residents or rated by systems like LEED, BREEAM, and HK-BEAM, are considered attributes of green buildings. Some research suggests these attributes positively affect economic gains, such as utility benefits, making users more inclined to pay for green buildings, thereby increasing demand in the real estate market.

Goodwin (2011) summarized research on green building demand from 1975 to 2010, categorizing perspectives based on attributes. Banfi et al. (2008) focused on the willingness to pay for environmental attributes. It's crucial to note that results can vary across regions due to different behaviours and attitudes among respondents. Goodwin (2011) noted differences in outcomes between studies in the USA, Switzerland, and Sweden. Many studies have explored attributes within specific populations, such as Achinicht's (2010) German study, where homeowners prioritized environmental benefits (heating systems) over insulation choices in a choice experiment.

Green building attributes significantly influence demand for conventional buildings, with homebuyers willing to pay for them. In Nanjing, China, high-income individuals paid more for improved comfort, while both high and low-income respondents paid extra for unpolluted environments and non-toxic materials in good locations (Hu et al., 2014). In Hong Kong, both green and conventional residents were willing to pay more for energy conservation compared to indoor air quality, noise reduction, landscape enlargement, or water conservation (Chau et al., 2010). Hu et al. (2014) identified five attributes affecting willingness to pay, three benefiting households, and two focusing on environmental conservation (unpolluted environment and non-toxic materials), with only higher-income individuals willing to pay for these.

In the UK, attracting potential tenants requires effectively communicating tangible cost savings from energy-efficient buildings (Adan & Fuerst, 2015). Green building buyers also value better health conditions. Besides green building attributes, the living environment, including location and neighbourhood quality, influences housing decisions. Western countries show a higher willingness to pay for factors like job opportunities, cleanliness, security, avoiding landfills, and air quality over amenities like gyms and cultural services, possibly due to health-related concerns (Achinicht, 2010).

Based on the literature review, the authors have identified various attributes of green buildings across different dimensions. These attributes include comfort, health, unpolluted environments, non-toxic materials, good locations (Ali & Nsairat, 2009); energy bill reduction, CO_2 emission reduction, volatile organic compound emission reduction, and IT facility application (Park et al., 2012); energy conservation, indoor air quality improvement, noise reduction, landscape enlargement, and water conservation (Chau et al., 2010); and various aspects of comfort and satisfaction (Paul & Taylor, 2007). Additional attributes encompass site, material, water, energy, indoor environmental quality (Ho et al., 2005); land use, soil change, light environment, transportation, residential environment usability, energy resource-saving, environmental pollution, water resources management, green space construction, living space for biodiversity, and atmosphere and noise environments (Kim et al., 2013). Lastly, there are attributes related to lower energy costs, annual electricity and water cost reduction, long-term fuel cost reduction, preservation of water resources, expanding market for eco-friendly products, reduced health impacts, improved occupant satisfaction and comfort, and increased transportation options for employees (Waidyasekara & Fernando, 2012).

METHODOLOGY

As previously discussed, the attributes of green buildings can be categorized into three dimensions: environment, society, and economy. Each of these dimensions has implications for the development of residential and other types of green buildings. To assess the demand for residential green buildings within a specific population, it is essential to determine the preferences for these attributes, which can be measured using the Relative Importance Index (RII). Subsequently, another test, such as Factor analysis, can be conducted to explore the relationships and correlations among these attributes.

Data Collection

This survey employs a field survey approach to collect firsthand information from participants who rank factors influencing household satisfaction, aiming to assess support for improving conventional buildings in Kano, Nigeria. The field survey aids in clarifying measurements and utilizes the Likert Scale (Said et al., 2016, 2017, 2020), where respondents rate attributes on a scale of 1 (very low) to 5 (very high).

The survey questionnaire consists of two parts, each with two sections. Part One's first section gathers demographic information with nine questions. Part Two, the second section, lists green building attributes influencing the state's preference for residential green building implementation.

Part One includes 43 variables, while Part Two encompasses 28 variable sets. These attributes are drawn from literature, household data, and state authorities. Furthermore, the green building attributes are categorized into three dimensions as follows:

i) Environmental Attributes
ii) Social Attributes
iii) Economic Attributes

The respondent survey utilizes random sampling to gauge public and expert support for green building development in Kano State, Nigeria. Kano State, positioned between latitudes 10° 33'N and 12° 23'N and longitudes 7° 45'E and 9° 29'E, had a 2006 census population of 9,401,288. Located in northern Nigeria, it shares borders with Jigawa, Katsina, Kaduna, and Bauchi. Second in population only to Lagos, it spans 20,131 sq. km (3.13% of Nigeria's total area) and comprises 44 local government areas. Kano State is divided into three geopolitical zones: Kano Central, Kano South, and Kano North, and plays a pivotal role as a commercial hub in northern Nigeria. (Adebayo et al., 2013; Naibbi & Healey, 2013). Figures 1 and 2 display the positions of Nigeria and Kano State on the Nigerian map, respectively.

Figure 1: Map of Nigeria
Source: Wikimapia (2023)

Figure 2: Map of Kano State, Nigeria
Source: Wikimapia (2023)

We used random sampling to ensure diverse representation. We distributed 350 questionnaires in Kano State to both the general public and experts from various professions, categorizing all as Kano metropolis households (Table 1), with respondent ages ranging from 20 to 50+ within each household.

Table 1: Respondents of Kano Metropolis

Questionnaire Distributions	
Kano metropolis	Specific Areas Distributed
1.Kano Municipal	Zage, Zango, K/mata
2.Gwale	BUK, G/Kyaya
3.Dala	Koki, K/Wambai
4.Tarauni	Yan Gwan-gwan
5.Nasarawa	GRA, Alfurkan
6.Fagge	Bata, Kwari

DATA ANALYSIS

Data analysis involved using the Relative Importance Index (RII) method to assess each factor's contribution in improving conventional residential buildings, based on respondent perceptions. Factor analysis (FA) then extracted key factors from the dataset.

Relative importance index

Relative importance refers to the proportionate contribution that each predictor makes to R^2, taking into account both its individual impact and its incremental effect when combined with other predictors (Johnson & LeBreton, 2004; Wood et al., 2019).

$$\text{RII} = \frac{\sum W}{A \times N} (0 \leq RII \leq 1)$$

Where;
RII = Sum of weights (W1 + W2 + W3 + W4……+ Wn) / A x N
W = weights given to each attribute (i.e., 1 to 5 where ‘1’ is very low important and ‘5’ is very highly important.
A = highest weight (i.e., 5 in this case)
N = total number of respondents

Factor Analysis

Factor analysis, as utilized by Htet & Wongsunopparat (2021), reveals latent variable dimensions by reducing the attribute space. It operates independently of a specified dependent variable and serves various purposes:
·Reducing variables for modelling.
·Confirming test convergence, and reducing test administration.
·Validating scales or indices.
·Selecting variables based on their correlation with principal components.
In this research, factor analysis validates the index obtained from RII, assessing support for green building attributes.

RESULTS

Respondents’ Profile

Table 2 presents the respondent's background, categorized into the respondent profile, housing information, and income. Examples of these categories include gender, age, marital status, education, and employment.

Table 2: Respondents' Profile

Profile information	Category	Frequency	Percentages (%)
Gender	Male Female	152 48	76.0 24.0
	Total	200	100.0
Age(years)	20 and Below 21 – 30years 31 – 40years 41 – 50years 51 and above	6 69 68 46 11	3.0 34.5 34.0 23.0 5.5
	Total	200	100.0
Marital status	Single Married Divorced	64 122 14	32.0 61.0 7.0
	Total	200	100.0
Education	Diploma Degree Masters PhD Others	48 80 31 10 31	24.0 40.0 15.5 5.0 15.5
	Total	200	100.0
Employment	Civil servant Private Pension Unemployed Others	80 65 13 32 10	40.0 32.5 6.5 16.0 5.0
	Total	200	100.0

Using a five-point response scale (Tables 3(a)-(c)), RII generates values from 0.1 to 1.0. The group index averages RII scores within the environment, social, and economic categories. Social (Table 3(a)) had the highest average RII score of 0.663, followed closely by environment (0.642) and economic (0.633). This highlights social aspects as most important in green building preferences, particularly emphasizing a clean environment, aligning with Ali & Nsairat's (2009) findings. Therefore, ensuring cleanliness during construction is crucial for residential development.

Table 3 (a): Relative Important Index of Social Attributes

Factor	1	2	3	4	5	W	RII	Rank
Social attributes							**0.663***	**1**
Site drainage patterns	23	29	49	47	52	676	0.676	
Operation and maintenance	19	37	46	54	44	667	0.667	
Waste management (recycle/reduce)	31	22	59	55	33	637	0.637	
Location (bad/fair/good)	16	23	60	47	54	700	0.700	
Site selection	17	29	67	48	39	663	0.663	
Building orientation	20	38	69	39	34	629	0.629	
Daylight consideration	13	18	75	57	37	687	0.687	
Ventilation	14	32	52	52	50	692	**0.692**	
Building designing (in-house/expert design)	10	27	68	49	46	694	**0.694**	
Landscape area enlargement	24	31	56	56	33	643	0.643	
Adverse health impacts	15	30	60	56	39	674	0.674	
Transportation options for employee	21	38	52	56	33	642	0.642	
Information Technology facilities	25	24	65	48	38	650	0.650	
Waterways	22	32	68	40	38	640	0.640	
Noise level (low/high)	27	27	63	42	41	643	0.643	
Painting colour (i.e. gold/green/white/brown)	23	42	58	46	31	620	0.620	
Access to amenities	17	35	43	49	56	692	0.692	
Well and Borehole	43	25	36	44	52	637	0.637	
Building quality	14	27	46	55	58	720	**0.720**	
Crowding	32	39	66	37	26	586	0.586	
Environment (Clean/unclean)	14	22	45	53	66	735	**0.735**	

Respondents ranked the environment group second in influence on residential green buildings. Key factors in this category were connecting with nature (RII 0.686), environmentally friendly construction (RII 0.671), and lighting environment (RII 0.664) (Table 3(b)). These findings support Achinicht (2010) and Daramola et al. (2014), emphasizing the importance of aligning housing policies with environmental protection, as suggested by Dahiru et al. (2014).

Table 3 (b): Relative Important Index of Environment Attributes

Factor	1	2	3	4	5	W	RII	Rank
Environment attributes							**0.642***	**2**
Environmental issues (polluted/Unpolluted)	46	31	52	23	48	596	0.596	
Materials used in construction	23	47	55	35	40	622	0.622	
CO_2 emissions (high/low)	35	34	77	26	28	577	0.577	
Living space for biodiversity	18	30	63	59	30	652	**0.652**	
Connecting with Nature	15	28	58	57	42	686	**0.686**	
Water conservation (reduce/recycle)	25	44	62	42	27	604	0.604	
Construction of green space	22	30	65	50	33	645	**0.645**	
Lighting environment	19	33	50	64	34	664	**0.664**	
Protection of ecological resources	22	41	60	40	37	632	0.632	
Air pollution (increase/Reduce)	30	24	52	45	49	662	0.662	
Environmentally-friendly construction	13	32	62	59	34	671	0.671	
Soil and water conservation	18	32	59	54	37	660	0.660	
Land preservation	16	38	58	53	35	653	0.653	
Energy use (efficiency/renewable)	16	32	66	54	32	654	0.654	
Microclimate Factors (solar &wind loads)	30	24	58	47	41	645	0.645	

Economic benefits (Table 3(c)) had the lowest average RII (0.633), indicating lower importance compared to social and environmental aspects. Though the score gap isn't wide, it's around 0.6. Individually, energy cost issues ranked highest (RII), supported by Waidyasekara & Fernando (2012), followed by expanding the market for environmentally preferable products (green building), making them the most beneficial and economical aspects in adopting green concepts in Kano, Nigeria.

Table 3 (c): Relative Important Index of Economic Attributes

Factor	1	2	3	4	5	W	RII	Rank
Economic attributes							**0.633***	**3**
Energy costs (high/low)	27	28	73	37	35	629	0.629	
Local recycling market (building materials)	25	38	69	35	33	613	0.613	
Expand the market for environmentally preferable products(green building)	20	30	63	54	33	650	0.650	
Use of Recyclable materials	22	38	69	50	21	610	0.610	
Energy issues (efficiency/renewable)	21	28	61	58	32	653	0.653	
Labour cost (Manpower/machine/material)	18	26	78	49	29	645	0.645	

Factor Analysis

The primary aim of the Factor analysis (FA) was to validate the index findings by identifying and enumerating the list of important components, following the approach suggested by Zatoril et al. (2018). To assess the adequacy of the FA, the accepted criteria relied on the Kaiser-Meyer-Olki (KMO) and Bartlett's Test. The KMO is a measure of sampling adequacy (Figure 3), and generally, a KMO value within the range of 0.6 to 0.9 indicates that the sample is sufficient and acceptable, with values of 0.8 to 0.9 considered particularly favourable (Sahbaeiroy, 2018). In this analysis, the KMO value is calculated to be 0.849 for all variables, indicating that the sample is adequate for further analysis and validation of the findings.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.849
Bartlett's Test of Sphericity	Approx. Chi-Square	3112.623
	Df	861
	Sig.	.000

Figure 3: KMO and Bartlett's Test

Table 4 reveals 12 components extracted from the initial set of 43 variables via factor analysis, encompassing key aspects of green building (environmental, economic, and social). The primary factor is social, closely linked to environmental factors and less so to the economic group. These factors include waste management, unpolluted environment, biodiversity-friendly living spaces, connecting with nature, operation and maintenance, lighting, environment, soil and water conservation, among others.

Additionally, social attributes merge with economic attributes as a selective component, with the environment group more relevant to the completion phase. Attributes like indoor ventilation, occupant habitability, annual electricity costs, consistent electricity supply, occupant health, renovation and demolition costs, and indoor daylight play significant roles in household satisfaction. These components offer valuable insights into preferences for green building attributes.

Table 4: Component Extraction

Factors/Components	Questionnaire title	Extraction	Rank
Waste management (recycle/reduce)	SOCIAL ATTRIBUTE 3	0.781	1
Environmental issues (polluted/Unpolluted)	ENVIRONMENT ATTRIBUTE 1	0.758	2
Living space for biodiversity	ENA4	0.721	3
Connecting with Nature	ENA5	0.721	4
Operation and maintenance	SOA2	0.696	5
Lighting environment	ENA8	0.690	6
Soil and water conservation	ENA12	0.686	7
Microclimate Factors (e.g. solar &wind loads)	ENA15	0.685	8
Information Technology facilities	SOA13	0.683	9
Building quality	SOA19	0.678	10
Protection of ecological resources	ENA9	0.677	11
Building designing (in-house/expert design)	SOA9	0.677	12

The assessment acknowledges that initially, only social and environmental attributes were extracted, and no economic grouping variables were included to validate the findings of the Relative Importance Index (RII). Consequently, we can conclude that the social attributes exhibit distinct characteristics when analyzed using FA and RII.

CONCLUSIONS

The study employed the Relative Importance Index (RII) and Factor Analysis (FA) to analyze and identify key attributes of residential buildings. It examined the most influential factor within the dimensions of green residential buildings, both in the preliminary and completion stages, focusing on household benefits. The preliminary stage is most influenced by variables from the social and environmental groups, while the completion stage is significantly influenced by attributes from the environmental and social dimensions, all of which relate to end-user benefits.

In the real estate sector, land and property development is notably expensive compared to other industries worldwide. Conventional buildings often lead to issues like energy inefficiency, poor indoor quality, emissions, excessive waste, and non-environmentally friendly construction materials. These shortcomings, along with inadequate waste management and design considerations, directly impact households.

To address these challenges and promote sustainable building practices, the concept of green buildings has emerged. Green buildings integrate various features related to the environment, society, and economy to create eco-friendly, energy-efficient structures. In this study, the Relative Importance Index (RII) and Factor Analysis (FA) determined the most important attribute based on household preferences. The research involved distributing questionnaires to households in Kano, Nigeria's metropolis.

The findings revealed that, among the three aspects of green building, the social attribute held the greatest influence on household preferences. This highlights that building designs emphasizing social factors, like community well-being and environmental awareness, have the most significant impact on the support and acceptance of green building concepts among surveyed households.

REFERENCES

Achinicht, M. (2010). Do Environmental Benefits Matter? A Choice Experiment Among Housing Owners in Germany. ZEW Discussion Paper 10-094, 1-24.

Adan, H., & Fuerst, F. (2015). 23 Million Upgrading Decisions: A Microeconomic Approach to Understanding Green Investments in the UK Housing Market. University of Cambridge, Department of Land Economy, 1-27.

Adebayo, O., Ayuba, P., Oyrtola, S., & Audu, H. (2013). Analysis of User's Perception on How to Achieve Thermal Comfort in Kano State Luxury Homes. Developing Country Studies, 1-11.

Ali, H. H., & Nsairat, S. A. (2009). Developing a green building assessment tool for developing countries - A case of Jordan. *Building and Environment*, 1053–1064.

Banfi, S., Farsi, M., Filippina, M., & Jakob, M. (2008). Willingness to pay for energy-saving measures in residential buildings. *Energy Economic*, 503-516.

Chau, C., Tse, M., & Chung, K. (2010). A choice experiment to estimate the effect of green experience on preference and willingness-to-pay for green building attributes. *Building and Environment,* 2525-2561.

Claveria, O. (2021), A new metric of consensus for Likert-type scale questionnaires: an application to consumer expectations. J Bank Financ Technol 5, 35–43. https://doi.org/10.1007/s42786-021-00026-5

Dahiru, D., Dania, A. A., & Adejoh, A. (2014). An Investigation into the Prospects of Green Building Practice in Nigeria. *Journal of Sustainable Development*, 158-167.

Daramola, A., Oluwatoyin, A., & Oladele, A. (2014). Housing Infrastructural Development and Green Building Strategies in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences*, 281-288.

Goodwin, K. R. (2011). The Demand for Green Housing Amenities. *JOSRE*, 127-141.

Ho, D. &., Yau, Y., Cheung, A., & Wong, S. (2005). Comparative Study of Building Performance Assessment Schemes in Hong Kong. *Hong Kong Surveyor*, 47-58.

Htet, Y. K. K. & Wongsunopparat, S. (2021). Study Of Factors That Effect and Influence on The Personal Financial Management of The Young Adult. *Journal of Empirical Economics and Social Sciences*, 3 (1), 79-100. DOI: 10.46959/jeess.809250

Hu, H., Geertman, S., & Hooimeijer, P. (2014). The willingness to pay for green apartments: The case of Nanjing, China. *Urban Studies,* 3459–3478.

Kim, M. J., Oh, M. W., & Kim, J. T. (2013). A method for evaluating the performance of green buildings with a focus on user experience. *Energy and Buildings,* 203-210.

Michael, R., & Rochelle, A. (2013). Construction costs comparison between 'green' and conventional office buildings. *Building Research & Information*, 198–208.

Naibbi, A. I., & Healey, R. G. (2013). Northern Nigeria's Dependence on Fuelwood: Insights from Nationwide Cooking Fuel Distribution Data. *International Journal of Humanities and Social Science*, 160-173.

Nduka, D. O., & Sotunbo, A. S. (2014). Stakeholders' Perception on The Awareness of Green Building Rating Systems and Accruable Benefits in Construction Projects in Nigeria. *Journal of Sustainable Development in Africa*, 118-130.

Olanrele, O. O., Alias, A., Said, R., Bello, N. A. (2017). Towards global uniformity and sustainable compensation valuation for compulsory land acquisition. Journal of Design and Built Environment, 17, 27-37.

Olanrele, O.O., Said, R., Daud, M.N., & Majid, R.A. (2018), REIT Financing of Real Estate Development Projects in Nigeria: Why Not? *Journal of Design and Built Environment*, Special Issue (1), University of Malaya, pp 102-115.

Olanrele O.O., Fateye O.B., Adegunle T.O., Ajayi C.A., Said R., Baaki K. (2020). Causal effects of macroeconomic predictors on real estate investment trust s (REIT s) performance in Nigeria, *Pacific Rim Property Research Journal. 26*(2), 149-171. doi:10.1080/14445921.2020.1857498

Otegbulu, A. (2011). Economics of Green Design and Environmental Sustainability. *Journal of Sustainable Development,* 240-248.

Park, M., Hagishima, A., Tanimoto, J., & Chun, C. (2012). Willingness to pay for improvement in environmental performance of residential buildings. *Building and Environment*, 225- 233.

Paul, W. L., & Taylor, P. A. (2007). A comparison of occupant comfort and satisfaction between a green building and a conventional building. *Building and Environment*, 1858-1870.

Romero, M. M., Krogmann, U., Wallbaum, H., Ostermeyer, Y., Senick, J. S., & Andrews, C. J. (2013). Relative importance of electricity source and construction practices in residential building: A Swiss-US comparison of energy-related life-cycle impacts. *Energy and Buildings*, 620-631.

Sahbaeiroy, F. (2018). Design and Psychometric of Smoking Cessation Instrument according to Precaution Adoption Process Model in Patients Hospitalized in Hospitals Affiliated to Medical University of Babol, Iran, during 2017. *Asian Journal of Pharmaceutics* (AJP), 12(01). https://doi.org/10.22377/ajp.v12i01.2084

Said, R., Adair, A., McGreal, S., & Majid, R. (2014). Inter-relationship between the housing market and housing finance system: Evidence from Malaysia. *International Journal of Strategic Property Management, 18*(2), 138-150.

Said, R., Majid, R. A., Alias, A., Adnan, Y. M., Razali, M. N. (2016). Sustainable housing affordability in Sabah. *Planning Malaysia* (5), 65-76.

Said, R., Majid, R. A., Daud, M. N., Esha, Z., Razali, M. N. (2017_a). Owners' perception towards sustainable housing affordability in Kuching, Sarawak. *Journal of Design and Built Environment*, 17, 194-206.

Majid, R. A., Said, R., Chong, J. T. S. (2017_b). Assessment of bubbles in the Malaysian housing market. Planning Malaysia, 15(3), 27-38.

Said, R., Majid, R. A., Pey, K. C., & Olanrele, O. O. (2020). Ascertaining the business sustainability of heritage properties in Malaysia. *International Real Estate Review, 23*(4), 1163-1185.

Said R., Majid R.A., Akinsomi O., Hishamuddin M.I. (2022). Sustainability of Residential Investment in Klang Valley, Malaysia, *Journal of Design and Built Environment. 22*(3), 124-139

Saulius, R., Andrius, S., & Edita, J. (2013). Sustainability Assessment Studies of Recreational Buildings. 11th International Conference on Modern Building Materials, *Structures and Techniques,* MBMST 2013 (pp. 929-937). Vilnius: Elsevier.

Waidyasekara, K., & Fernando, W. (2012). Benefits of Adopting Green Concept For Construction Of Buildings In Sri Lanka. ICSBE, 1-13.

Wikimapia, http://wikimapia.org/country/Nigeria/Kano/Kano/. Retrieved 18 August 2023.

Wood, D., Lowman, G. H., Harms, P. D., & Roberts, B. W. (2019). Exploring the relative importance of normative and distinctive organizational preferences as predictors of work attitudes. *Journal of Applied Psychology, 104*(2), 270–292. https://doi.org/10.1037/apl0000356

Zalejska-Jonsson, A. (2012). Evaluation of low-energy and conventional buildings from occupants' perspective. *Building and Environment*, 135-144.

Zatoril A., Smith, M.K. & Puczko, L. (2018), Experience-involvement, memorability and authenticity: The service provider's effect on tourist experience, *Tourism Management*, Volume 67, Pages 111-126. https://doi.org/10.1016/j.tourman.2017.12.013

Zuo, J. and Zhao, Z.Y., (2014) "Green building research-current status and future agenda: A review," *Renew. Sustain. Energy Rev.*, vol. 30, pp. 271-2

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