Valuers' perception of the Relative Influence of Sustainability Features in Nigerian Property Valuation

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Abstract

Purpose- *This study explores the perceptions held by Estate Surveyors and Valuers (ESVs) in Lagos regarding the influence of sustainability features (SFs) in property valuation and also ascertains if the influence differs in residential accommodation and commercial office space valuation.*

Methodology- *Multiple choice and Likert scale questionnaires were randomly administered to 198 valuers representing 50% of the ESVs in Lagos as contained in the current NIESV directory. To ascertain their perception and determine variations in influence across the two property types, ranking was done on a Likert scale of 1-5 and paired sample t-test was used respectively. The data obtained was analyzed using descriptive and inferential statistics.*

Findings*- Access to transportation emerged as the highest-rated sustainability feature (SF) influencing residential property valuation with a mean rating of 4.14, followed closely by durable materials (4.02) and space efficiency (3.81). Commercial properties mirrored nearly the same perception, with access to transportation, use of durable materials, and space efficiency receiving mean ratings of 4.19, 4.07, and 3.9 respectively. Findings reveal a calculated emphasis on location, material quality and cost which contradicts Western prioritization of energy efficiency. Nine out of the 26 sustainability features emerged with p-values less than 0.05 establishing a variance on the influence of some sustainability features across the two property types. Notably, there is a perceived higher influence of these SFs in residential property valuation.*

Research limitations- *The issue of reluctance among the target population to allocate sufficient time for survey participation is a major barrier, leading to a retrieval rate of 58%.*

Theoretical/Social/Practical implications *– The findings bring to focus the considerations that can shape property valuations in Lagos. Ultimately, the incorporation of a sustainability premium into rental or capital valuation will provide valuable insights for developers, policymakers and other investors in sustainable buildings.*

The originality/value*- This study has established a localized perspective of the varied influence of sustainability features in residential and commercial property valuation in Lagos, Nigeria.*

Keywords: *Valuers, Perception, Property Valuation, Sustainability Features, Lagos.*

1.0 Introduction

In recent times, sustainability has become a global phenomenon. Governments, practitioners, researchers and systems across the world are increasingly recognizing that meeting today's needs must not jeopardize the ability of generations ahead to meet their own needs. As a major contributor to environmental degradation, the real estate sector is also finding ways to reduce the impact on the environment by ensuring properties are developed and managed in such a way that negative impacts on the environment are minimized. (Al-Qudah *et al.*, 2022).

Sustainability in real estate development is measured using indicators or features. These features are commodities, behaviour, technologies, items, and systems that promote energy efficiency designs, clean air, water saving initiatives, wastewater treatment and recycling systems, durability of building materials, cost minimization and space efficiency, occupiers' health, reduced carbon emissions, green open spaces, automatic presence detectors, proper building orientation to harvest maximum natural light and indoor air quality. (Tapsuwan *et. al*., 2018). To promote investment in buildings with SF, their value must be known and measurable when compared to conventional buildings.

Property valuation is the determination of the monetary worth of a building. Worth considers user

perception, preference, willingness and physical characteristics (Rahadi *et al*., 2015; Zhang *et al.,* 2020; Ngoc *et al*, 2023). To value sustainability, economic, environmental and social features are considered in the valuation process. Valuers are a group of professionals licensed to carry out real estate valuation. They are called, valuers, appraisers, estate surveyors and valuers, and realtors among others in different parts of the world. By virtue of their training and experience, they can interpret the market and determine its worth to the users. Alongside education, training and professional guidelines, valuers also develop heuristics or use market information effectively and promptly (Warren-Myers, 2016). Also, they can interpret to owners and users differently.

Studies have established the influence of sustainability on property values (Ibraeva *et al*., 2020; MacAskill *et al.,*2021). However, this influence differs based on the proximity of the SFs, characteristics of the neighbourhood and user preferences. (Odubiyi*et. al.,* 2024). These factors guide the valuer's opinion in determining the sustainability premium and hence their professional views are important.

As the ideas of green initiatives and sustainability gradually gain momentum in developing nations, Nigerian valuers appear to be lagging in the integration of sustainability considerations within their valuation calculations, despite a noticeable level of awareness. It is against this backdrop that this study seeks to investigate the perception of valuers in Nigeria on the influence of sustainability in the valuation of residential and office properties in Lagos. It also ascertains whether, in their perception, there are variations to this influence across the two property types. Previous studies have not made this comparison. An insight into their perception will help draw useful conclusions that can guide investment decisions in the study area. The research employs a quantitative approach through physical and online surveys and adopts Lagos, the economic nerve centre of the nation as the study area. A considerable number of sustainable buildings have begun to spring up in Lagos. Since 40% of ESV firms in Nigeria have their headquarters in Lagos (ESVARBON, 2020), a wider coverage of the target population is guaranteed there. The findings will inform industry practices, policy decisions, and academic discourse surrounding property valuation and sustainability in the study area.

2.0 Literature Review

The emerging concerns for environmental preservation have caught the attention of government, practitioners and academics alike. (Velenturf & Purnell, 2021; Chouaibi, *et.al.,* 2022;). There is an ongoing call for all to embrace sustainable practices for the survival of generations to come. (Stokes and Seto, 2018; Al-Qudah *et al*., 2022). Due to the huge contribution of the real estate sector to issues of pollution, deforestation and general depletion of earth resources, a higher commitment to sustainable development goals is critical (Doan *et al.,*2017). Low investment in sustainable buildings has been observed when compared to the campaign on its importance. It seems the value of sustainability is not well known though many studies have established its impact on property values. (Facchrudin & Fachrudin, 2017a; Ibraeva *et al*., 2020; MacAskill *et al*.,2021). As an aftermath, green building ratings and certifications were adopted in the Western world as a way of encouraging stakeholder's participation in sustainable development. (Odubiyi *et al.*,2024)

2.1 Green versus Sustainability

The terms green and sustainability are used interchangeably in many circles. In the literature "green building" identifies buildings with a reduced environmental impact; while "sustainable building," connotes a building that possesses the capacity to be sustained as it lastingly limits resource depletion or damage (Kamath *et. al.,* 2019).

Green rating tools such as the United States LEED (Leadership in Energy and Environmental Design), Canada's LEED Canada, France's HQE (High Environmental Quality), Germany's DGNB (Deutsche Gesellschaft fürNachhaltigesBauene.V.), Australia's Green Star, New Zealand's Green Star, Japan's

CASBEE (Comprehensive Assessment System for Building Environmental Efficiency), Hong Kong's BEAM (Building Environmental Assessment Method), and Singapore' BCA (Building and Construction Authority) Green Mark Scheme (Pham & Nguyen, 2021; Doan *et al*.,2017), have gained popularity across the globe, particularly in the western markets. Initially, most of them focused on energy conservation and not until recent times have they begun to evolve new priorities in sustainability (Licina *et.al.,* 2021).

Green rating is a system of appraising how compliant a building using the rating tools as a yardstick. There is evidence of rent or price premium on properties with energy-related certifications in the US (Fuerst, Gabrieli and McAllister, 2017; Holtermans and Kok, 2019), Europe (Kok and Jennen, 2012; Porumb*et al.,* 2020), Singapore (Deng, Li and Quigley, 2012; Deng and Wu, 2014) and the UK (Chegut, *et al.,* 2013; Fuerst and van de Wetering, 2015) and Australia (Newell, *et al.,* 2011). Despite this, valuers face the challenge of incorporating price and rental premiums in their valuation calculations (Sayce, 2018). Valuing sustainability offers more than an arbitrary rating imposed by any agency or government to promote green. It is a well-rounded concept that stands on many legs (MacAskill *et al*.,2021). The triple-bottom-line theory of sustainability establishes an environmental (MacAskill *et al*., 2019), social (Febi *et al.,* 2018; Maltais and Nykvist, 2020;) and economic dimensions (Burton, 2018; Siswantoro and Iop, 2018) to it. These dimensions are considered through indicators referred to as sustainability features.

Ahmad *et al*. (2016) referred to sustainability features as green technologies and classified them under seven broad categories: Natural light technologies, Control technologies, Water and Energy Conservation, Renewable Energy, Energy and Water Recovery, Air Quality, and Temperature Control Technologies. (Fachrudin *et. al.,* 2018) highlighted these value-impacting features in six major categories including appropriate site development, energy efficiency, water conservation, materials resource and cycle, indoor health and comfort and building environmental management.

Table 1: Sustainable Features

S/N	SUSTAINABLE PRACTICE	FEATURES
	Water Efficiency	Rainwater harvesting, water saving facilities in toilets and bathrooms, Channelization of water to gardens through drains.
	Economy/Materials Conservation	Use of durable materials, Food gardening, Storey house, reduction of walls and doors through open plans
	Waste Management	Control of noise, fumes and waste, treatment of wastewater, waste recycle/ recycle bins, non-burning for waste disposal methods, reduced use of generators
	Innovation/ Site Planning	Easy access to public transportation, space efficiency, green areas, adaptability of building for mixed uses, green certification
	Energy Efficiency	Solar Panel, motion-sensitive switches, LED light bulbs and other low energy lighting, Energy Star appliances, Natural lighting
	Indoor Air Quality	Low fence, Cross ventilation, Effective exhaust and air vent, Availability of fire extinguishers.

Source: Adapted from (IMMOVALUE,2010; Ismail & Majid,2014; Oyewole and Kolawole, 2018)

2.2 Ssustainability and Valuation

Aroul & Hansz (2012) observed differing levels of influence of sustainability features on property values for different climes in Texas. This corroborates the fact that value or worth is influenced not only by physical characteristics but user perception and preferences (Zhang *et al.,* 2020; Ngoc *et al*, 2023). In earlier years. Many studies from developed Western markets such as the US and UK presented energy efficiency as the highest driver of property values (Fuest McAllister, 2011; Eichholtz *et al.,* 2013; Nurick, 2015).

In South Africa, similar studies revealed floor area, number of bathrooms, and availability of furniture as having a greater positive influence on the rental values of residential properties (Odubiyi *et al.*,2024). Leibeit *et. al.,* (2019)

also indicated that urban green spaces influenced residential property values. These all debunked earlier assertions by Rahman, (2017), that sustainability features do not have any influence on property values. According to Odubiyi *et a*l., (2024), the proximity of SFs, characteristics of the neighbourhood and user preferences are factors that determine whether SFs will have an influence on property values or not. This affirms an earlier opinion that green open spaces can have a negative impact by promoting crimes in poor communities (Braakman, 2017).

In examining the perception of professionals, Fachrudin *et al* (2018) examined the considerations of appraisers who integrate sustainability into property valuation in Indonesia and affirmed the impact on rental values. Hossain *et. al.,* (2022) also, investigated the perception of valuers on the worth of sustainability in commercial properties, Findings revealed that sustainability features were perceived as more important to owner-occupiers than investors. This corroborates earlier assertions on the fact that the worth of sustainability can be influenced by user preferences (Odubiyi *et al*.,2024).

Few studies in Nigeria have looked at valuers' perceptions of real estate sustainability and property valuation (Babawale and Oyalowo 2011; Komolafe *et. al.,* 2015; Ibiyemi *et. al.*, 2019). However, their perceptions of how significantly each of these features influences property values were not ascertained. Also, whether the impact on the value of each feature is the same for all property types was not ascertained. It is against this backdrop that this study seeks to examine the perception of Estate surveyors and valuers in Lagos, on how sustainability features influence the values of residential and commercial properties to draw meaningful insights that can guide the governments, and industry, and promote sustainable investment in the study area.

3.0 Methodology:

The target populations are Estate Surveyors and Valuers in Lagos, one of the nation's commercial nerve centres with a booming property market. ESVs are members of the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON), a professional body recognized by the Federal Government of Nigeria for granting valuation licenses to professionals. Given their training, ESVs can accurately interpret the market value of properties. The sampling frame consists of the 396 valuation firms in Lagos State listed in the current directory of the Nigerian Institution of Estate Surveyors and Valuers (NIESV). To accommodate attrition adequately, 198 valuers, representing fifty percent of the study population were randomly selected. Several reasons support this approach. It is assumed that many younger valuers possess greater exposure to contemporary trends and modern valuation techniques compared to their older counterparts. Thus, a sampling method ensuring equal opportunity for selection seemed more suitable to avoid bias towards any respondent category. To achieve the two objectives, both online and physical surveys were used to elicit information using multiple choice and Likert scale questionnaires. Firstly, the valuer's perception on the influence of the twenty-six identified sustainability features in residential and commercial office property valuation. For ease of analysis, these features were grouped into six major categories namely: Energy Efficiency (**EE**), Water Efficiency (**WE**), Innovation and Site Planning (**IS**), Economy(**E**), Waste Management (**WM**) and Indoor Air Quality (**IQ**). Ranking was done on a scale of 1-5 from a state of "*No Influence*"

to that of '*Much Influence*". Secondly, to determine if there are variations in influence across the two property types, a paired sample t-test was used. A hundred and fourteen (114) responses were received, representing a 58% retrieval rate. This methodology was adopted having been used in similar studies (Babawale and Oyalowo, 2011; Fachrudin *et al*., 2018; Hossain *et al.*, 2020).

Data collected in this study were analyzed through descriptive (median, mode, frequency distribution and percentages) and inferential statistics (the paired sample t-test)

4.0 Analysis and Discussion

This section presents the results of findings from the analysis of the data collected during the study. In the first place, it presented the rating of the perceived influence of the SFs on residential and commercial office property valuation. Thereafter, observed variations of influence on the two property types were presented.

4.1 Rating of perceived influence of SFs on valuation

In an aggregate presentation using mean ratings in Table 2, access to transportation ranked highest (4.14) in the test for level of influence in residential property valuation. This is followed by the use of durable materials (4.02) and space efficiency (3.81). Similar results were obtained for commercial properties with mean ratings of (4.19, 4.07 and 3.9) respectively for access to transportation, use of durable materials and space efficiency.

Table 2: Mean rating indicating Perceived Influence of SFs by ESVs on Valuation

	Residential		Commercial	
	Mean	Std. Deviation	Mean	Std. Deviation
EE				
Solar Panel	3.12	1.303	3.24	1.291
Motion Sensitive Switches	2.79	1.285	2.81	1.332
Led Light Bulbs and other low energy lighting	3.45	1.361	3.44	1.327
Energy Star Appliances	3.12	1.223	3.26	1.265
Natural lighting	3.58	1.339	3.26	1.457
Aggregate	3.24	1.010	3.24	1.055
WE				
Rain water harvesting	2.40	1.258	2.25	1.288
Water saving facilities in toilet and bathroom	3.19	1.332	3.27	1.369
Drains to channel water for gardening	2.51	1.292	2.47	1.299
Aggregate	2.70	1.046	2.70	1.044
IS				
Easy access to public transportation	4.14	1.013	4.19	1.083
Space efficiency	3.81	1.156	3.96	1.243
Green areas	3.23	1.194	2.74	1.276
Adaptability of building for mixed uses	3.42	1.083	3.38	1.206
Green Certification	2.63	1.305	2.49	1.290
Aggregate	3.45	.828	3.45	.839
E				
Use of durable materials	4.02	1.004	4.07	1.090
Food gardening (subsistence farming)	2.61	1.227	2.26	1.217
Storey house	3.36	1.094	3.29	1.224
Reduction of walls and doors through Open plans	2.77	1.109	3.48	1.159
Aggregate	3.18	.759	3.18	.807
WM				
Control of pollution (noise, fumes, wastes etc)	3.68	1.140	3.48	1.211
Treatment of waste water	3.14	1.297	3.05	1.341

	Residential		Commercial	
	Mean	Std. Deviation	Mean	Std. Deviation
Waste recycle bin for plastics	3.02	1.272	3.06	1.288
Waste disposal not burning	3.47	1.256	3.50	1.327
Reduced use of generators	3.37	1.312	3.15	1.473
Aggregate	3.26	.974	3.26	1.041
IAQ				
Low Fence	2.84	1.203	2.94	1.281
Cross Ventilation for reduced air conditioning	3.77	1.078	3.52	1.176
Effective exhaust and air vent	3.56	1.150	3.58	1.187
Availability of fire extinguishers	3.42	1.281	3.79	1.294
Aggregate	3.40	.924	3.40	.993

On an aggregate level, Table 2 further reveals the highest impact on residential and commercial property valuation is from innovation and site planning. (3.45). The least influence on residential and commercial property valuation is water efficiency, indicating low importance rating for water conservation in the study area.

Drains to channel water, food gardening, green certification, low fence and motion sensitive switches presented ratings below 3.0 bench mark. (See Figure 1&2). This is an indication that these features do not have considerable influence in the valuation of residential and commercial properties in the study area.

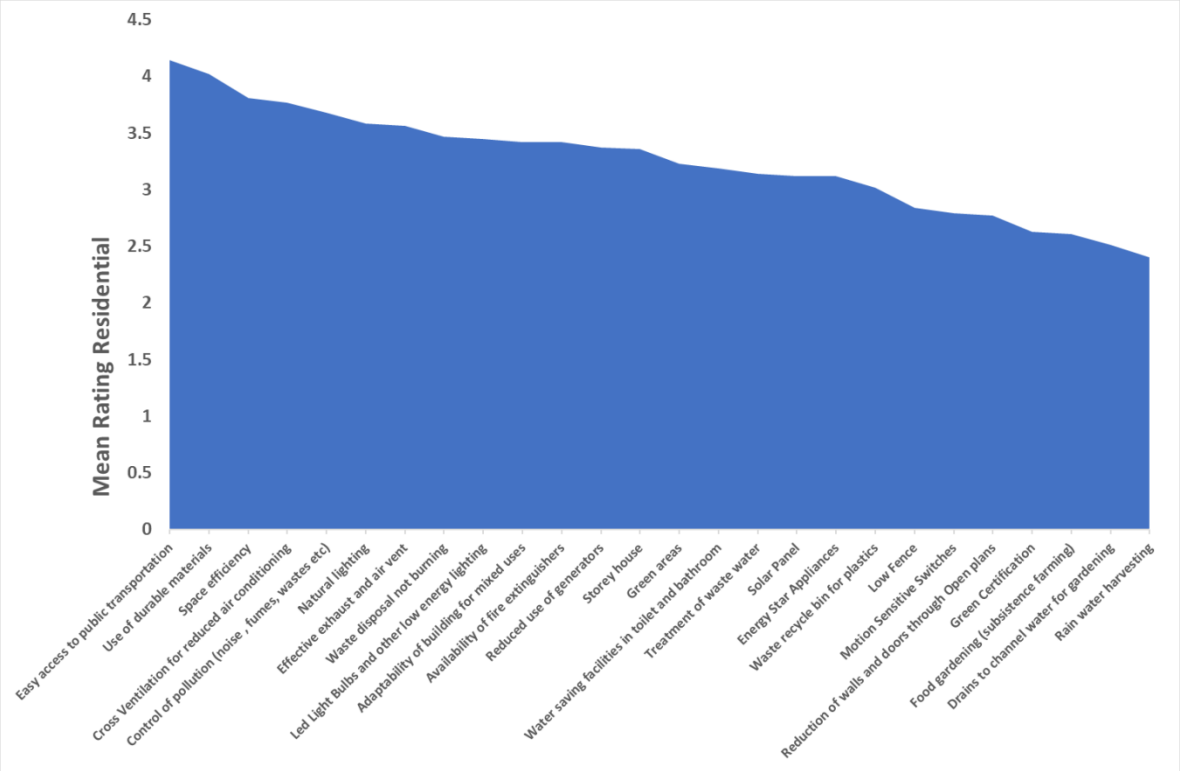

Figure 1: Mean Rating of Sustainability features in Order of their Perceived influence in Residential Property Valuation

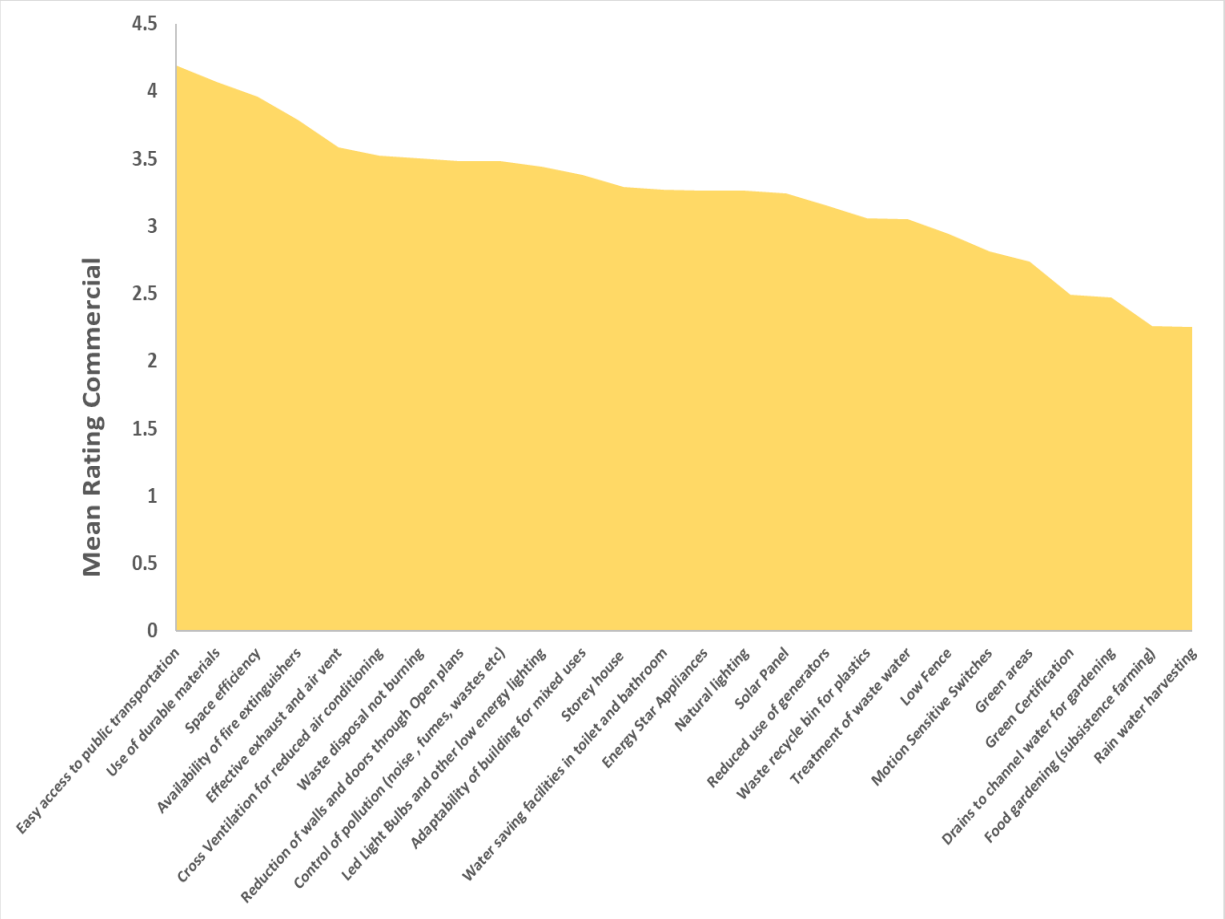

Figure 2: Mean Rating of Sustainability features in Order of their Perceived influence on Commercial Property Valuation.

4.2 Perceived variations in influence across property types

Observed differences in the influence of sustainability features across the two property types under consideration are presented in Table 3. The features presented negative and positive mean differences. Positive mean differences indicated that the sustainability features have a greater influence on residential properties while negative mean differences described sustainability features that have a greater influence on commercial property valuation. Out of the 26 sustainability features that were examined, variations in influences were significant in 9 with a value of $P<0.05$, across the two property types. Natural lighting (0.315), green areas (0.491), food gardening (0.345), pollution control (0.200), reduced use of generators (0.218) and cross-ventilation (0.243) presented positive mean differences indicating that more features have perceived higher influence in residential property valuation. Fewer features such as space efficiency (-0.153), reduction of doors and walls (-0.703) and availability of fire extinguishers (-0.367) presented as having perceived higher influence on commercial property valuation.

Table 3: Perceived variations in influence across property types using paired sample T test

	Paired Samples Correlations		Paired Samples Test Paired Differences				
	Correlation	Sig.	Mean Difference	Std. Deviation	T	df	p-value
EE							
Solar Panel	.688	.000	-.115	1.024	-1.194	112	.235
Motion Sensitive Switches	.653	.000	-.022	1.091	-.193	89	.847
Led Light Bulbs and other low energy lighting	.833	.000	.009	.777	.122	111	.903
Energy Star Appliances	.800	.000	-.138	.787	-1.825	108	.071
Natural lighting	.799	.000	.315	.894	3.715	110	.000
Aggregate	.855	.000	.010	.559	.199	112	.842
WE							
Rain water harvesting	.673	.000	.145	1.030	1.481	109	.142
Water saving facilities in toilet and bathroom	.866	.000	-.080	.699	-1.216	111	.227
Drains to channel water for gardening	.689	.000	.045	1.021	.465	110	.643
Aggregate	.780	.000	.034	.693	.523	111	.602
IS							
Easy access to public transportation	.846	.000	-.054	.585	-.973	110	.333
Space efficiency	.837	.000	-.153	.690	-2.338	110	.021
Green areas	.642	.000	.491	1.047	4.917	109	.000
Adaptability of building for mixed uses	.551	.000	.045	1.090	.435	110	.664
Green Certification	.703	.000	.136	1.000	1.430	109	.155
Aggregate	.794	.000	.095	.535	1.870	110	.064
E							
Use of durable materials	.795	.000	-.055	.675	-.847	109	.399
Food gardening (subsistence farming)	.635	.000	.345	1.044	3.469	109	.001
Storey house 00000	.533	.000	.072	1.126	.674	110	.501
Reduction of walls and doors through Open plans	.410	.000	-.703	1.233	-6.005	110	.000
Aggregate	.640	.000	-.089	.666	-1.407	111	.162
WM							
Control of pollution (noise, fumes, wastes etc)	.675	.000	.200	.950	1.996	89	.049
Treatment of waste water	.838	.000	.081	.752	1.135	110	.259
Waste recycle bin for plastics	.798	.000	-.045	.813	-.583	110	.561
Waste disposal not burning	.835	.000	-.027	.744	-.383	110	.703
Reduced use of generators	.682	.000	.218	1.120	2.043	109	.043
Aggregate	.809	.000	.073	.626	1.233	111	.220
IAQ							
Low Fence	.554	.000	-.099	000	-.888	110	.376

Cross Ventilation for reduced air conditioning	.685	.000	.243	.899	2.796	106	.006
Effective exhaust and air vent	.7	.000	-.018	.884	-.215	110	.830
Availability of fire extinguishers	.705	.000	-.367	.988	-3.520	89	.001
Aggregate	.761	.000	-.052	.666	-.826	110	.410

Items with p-values less than 0.05 are significant. Items with negative mean difference implies that the mean value for the commercial is higher than that of the residential.

4.0 Discussion of Findings

The study reveals that Access to public transportation, use of durable materials and space efficiency have perceived greatest influence in both residential and commercial property valuation in Lagos Nigeria. This is a divergence fromthe prioritization of physical characteristics in South Africa (Odubiyi*et al.*,2024) and energy-efficient features in Western markets (Nurick*et al*.,2015). It however buttresses the assertions that user perception and preferences are major determinants of worth (Zhang *et al.,* 2020; Ngoc *et al*, 2023).

More sustainability features have perceived greater influence in residential than commercial property valuation. Forprofitable investments in sustainable residential properties, greater consideration be given to natural lighting, green areas, food gardening, pollution control, reduced use of generators and cross ventilation as these SFs have perceived higher worth.

For investments in sustainable office spaces, there should be greater consideration for space efficiency, reduction of doors and walls and presence of fire extinguishers. This corroborates the study of Kucharska-Stasiak and Olbinska (2018), in which tenants in commercial office spaces in Poland had a greater preference for space efficiency.

Even though these SFs come under the three legs of sustainability, the greatest underlying motivations are economic rather than social and environmental. The study of Babawale and Oyalowo (2011), confirmed such disparity in the presentations of ratings among economic, social and environmental features in the valuation of a hypothetical property. This study however reveals that for sustainable investment in residential properties, economic SFs are the greatest drivers than social or environmental features. It seems acceptable to say that reduction of doors and walls and space efficiency in commercial properties are both also cost-efficient features.

Low fences will not influence residential and commercial property valuation in Lagos Nigeria. This is understandable in a country where there is a high level of insecurity. Lack of appreciation for green areas and green certification may also be revealing an un-readiness for green or whatever is not critical to immediate survival. Drains for channelling wastewater and rainwater harvesting buttress the findings that water-efficient features are the lowest influencers of commercial and residential properties in Lagos, Nigeria. The fact that most people can sink boreholes may be the reason why water conservation may not be a priority for those in the study area. There seems not to be a ready explanation as to why food gardening should fall into this category, especially in residential properties, although it may be safe to assume that residential areas in Lagos do not have much free land space for luxuries such as gardening. The increasing population forces space maximization in both property types.

5.0 Conclusion

This study examined the perceptions of valuers in Lagos regarding the influence of sustainability features in residential and commercial property valuation. Access to transportation, use of durable materials and space efficiency have the greatest influence on residential and commercial property

valuation. It is a notable shift from studies in the western markets where energy-efficient features are prioritized. The study also reveals an appreciation for more sustainability features on residential properties than commercial properties in Lagos Nigeria. Lastly, there is an underlying priority for cost minimization in the Nigerian property market more than attraction for social and environmental considerations. The study presents a guide to investors that will help increase the available stock of sustainable buildings in an informed way.

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