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ASSESSMENT OF VOID PERIODS IN RESIDENTIAL BUILDINGS IN MINNA, NIGERIA

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The period of void is a major challenge faced by investors in residential buildings in Minna. Re-letting vacant apartments takes a while, and in many cases, newly completed residential buildings experience voids. Therefore, at what level of void periods, residential building types that are most vulnerable, as well as locational differences are the critical questions that informed this study. Thus, the study aims to provide an in-depth assessment of void periods in buildings among residential neighbourhoods in Minna, Nigeria. The objectives are to assess the level of void periods, analyse variations across residential building types, and explore neighbourhood-level differences in the study area. The study utilized a quantitative research design, employing a structured questionnaire that was distributed to ESVs, LEAs, and property owners who oversee the management of the 1,500 residential units that were selected for the sample in 13 different neighbourhoods. Levene's test of homogeneity of variance, Welch adjusted analysis of variance, and the Games-Howell post hoc test were used for data analysis. The findings revealed aggregate mean void periods of 4.87, 5.47, 5.13, and 7.03 months for tenement, 1-bedroom, 2-bedroom, and 3-bedroom residential building types. This outcome varies significantly among the building types across the 13 neighbourhoods in terms of those with high and low void periods. The study concludes that there are relatively high void periods in the Minna residential property market and the need for collaborative efforts towards stemming the tide.

Keywords: neighbourhoods, residential buildings, void periods

INTRODUCTION

Void periods occur whenever a property is empty, vacant, or untenanted and generates no rental income. Void periods are foreseeable and can have a negative effect on the viability of investment in residential buildings. Wherever void occurrences are high in the property market, the actualisation of investment objectives seems rather unattainable (Oladokun 2011). Despite the increasing demand for accommodation in Minna, the study area, many properties remained unoccupied and void, thereby causing property owners to lose rent and further discouraging prospective investors in the property submarket. Over the years, void in residential buildings has become worrisome and of concern to stakeholders in the real estate market and government.

Residential buildings serve as a source of income for individuals, corporate organisations, and institutional investors alike. They constitute one of the most crucial subsectors within the real estate industry (Ansah, 2012). Although evidence has shown that they are sometimes outperformed by commercial properties in the market (Mfam and Kalu, 2012; Oyewole, 2013), they remain a critical social and economic asset to humanity. Therefore, as the urban population increases, residential buildings become the most sought-after. However, it is a phenomenon in

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urban real estate that voids naturally occur despite the significant role these buildings play. For instance, as a tenant vacates a building, the period between their move-out and the arrival of another usually results in a void (Dibb, 2012). When this interval between tenancies is not adequately managed, or planned for, it can extend significantly, leading to a loss of income while outgoings increase (Alafat and O'Connor, 2000). Consequently, it is possible to anticipate and predict these void periods. In this way, a prudent property manager who understands these property management dynamics should be able to deploy appropriate management skills and experience to minimise foreseeable extension in the average void period.

Minna is the capital city of Niger State, situated in the north-central region of Nigeria. The metropolitan area comprises two local government areas, Bosso and Chanchaga, which converge at the central business district, commonly referred to as the 'Mobil' area. The city's growth extends along the main road arterials that enter the city from Chanchaga through Mobil to Maikunkele, with Maitunbi on the eastern side and Kpakungu on the western side. The city faces infrastructure challenges, particularly concerning the road network, electricity supply, and access to pipe-borne water. These deficiencies exemplify the typical conditions found in most Nigerian cities. With the absence of industries, Minna's local economy thrives on retail, commercial, and agricultural activities. The property market is dominated by both residential and commercial properties, and the residential properties are characterised mostly by tenements, 1 and 2-bedroom flats or bungalows, with a comparatively lesser number of 3 bedrooms. It is predominantly a rental market, with more sales transactions involving land. The property market enjoys both private (individuals and corporate organisations) and government investments in residential properties. While the property investment climate is currently at a nurturing stage and far from maturity,

The town of Minna in recent years has been inundated with a rising urban population, largely due to influxes from Abuja, the Federal Capital Territory, and other adjoining towns and villages. This further stretches the existing demand for residential accommodation, despite the usual inept supply. The irony under this circumstance is the continued prevalence of voids in the Minna residential property market. Tenant replacement is not as immediate as often anticipated, even in some newly developed apartments. While the study by Ogunbajo et al. (2018) in Minna was able to identify the causes of voids, not much is known about the level of the void period that exists in the study area. It is in view of the foregoing that this study aims at providing an in-depth assessment of void periods in residential buildings among selected neighbourhoods in Minna. The objectives are to assess the level of void periods, analyse variations across residential building types, and explore neighbourhood-level differences in the study area. The study is justified by the need for real estate investors to have a clearer understanding of the levels of voids in the property market. Void is a risk that causes distortion in the cash flow of investment properties. However, not much empirical studies have been conducted in this regard; the only available study relating to residential properties is that of Oladokun (2011). Others, such as Akalemeaku and Egbenta (2013), Udoekanem and Ighalo (2016), and Iroham et al. (2021), all relate to commercial properties (shops and offices). Therefore, the dearth of literature on this important aspect of the property investment market also strongly informed the current study.

LITERATURE REVIEW

The concept of void has physical, economic, and legal connotations. Physically, void means vacant, empty, unoccupied, bare, or deserted space. When a building is without an occupant, either an owner-occupier or a tenant, it remains void. Physical void also exists even when a

tenant occupies a property with excess space remaining unused. For instance, if a tenant leases a 3-bedroom apartment while living alone, there will obviously be vacant rooms. In commercial buildings, a tenant may lease a large space in terms of square metres but only occupy, say, 60% of it, leaving the remaining 40% vacant (Akalemeaku and Egbenta, 2013). All these are instances of the occurrence of physical void. The economic perspective of void, on the other hand, relates to situations where a rental building is not generating income due to physical void. In some cases, a tenant may occupy the space but default on rent payments, resulting in a loss of income. From a legal perspective, the term void signifies something that is not valid or binding. A contract or agreement considered void means null, invalid, and has no legal consequence; therefore, it is unenforceable (Encyclopaedia Britannica, 2024). The concept of void often intertwines with practical scenarios. For example, if a property owner fails to meet any conditions of a lease, it renders the lease legally void. In cases involving repairs, such issues might discourage tenants from fulfilling their rental obligations, resulting in an economic void due to income loss. Ultimately, this situation could lead to eviction or the tenant moving out, leaving the building physically void.

The occurrence of a void during the transition of one tenancy to another, typically involving two different tenants, may not raise investor apprehension, but the duration of the void certainly will. This significantly underscores the need for available data on the general level of void within the property market to inform investors and managers' strategies towards its management. A survey conducted in the United Kingdom by Statista (2021) of 200 sampled property owners on void from 2013 to 2019 suggests that a typical residential property experiences an average void period of about 3 weeks per annum. However, the findings also indicate that this will vary by region, with London and city centre locations typically having lower void periods. In Nigeria, rent is paid annually, of which the 3-week void period per annum represents less than one month; hence, this outcome indicates a relatively lower void period compared to that found in some Nigerian property markets. For instance, Oladokun (2011) conducted a study on property voids and ethnic differentials in the Okota residential property submarket in Lagos State. The focus was to investigate the level of void periods and examine the causes. The study found that the average level of void periods is between 4 and 6 months (17 weeks–26 weeks). This is reasonably high, even with variations in the tenancy arrangements.

The levels of void periods in the commercial property submarket market, just like those in the residential property type, also indicate a similar high trend. In the commercial property submarket of Enugu, Akalemeaku and Egbenta (2013) observed a high void period that cuts across the central business district and other strategic locations. The outcome of the study revealed an average void period spanning between 6 months and 4 years, with most of the properties investigated experiencing between 70% and 100% void spaces. Contrariwise, for the Grade-A office buildings in the Lagos commercial property submarket, Irohan *et al.* (2021) observed that the properties exhibited a minimal average void space of 12%. Despite the limited void spaces, certain building vacancies have persisted for an extended duration of up to 9 months. Thus, the outcome on average void periods is in congruence with those of Akalemeaku and Egbenta (2013) and Oladokun (2011), despite differences in property types. While there is no available global standard to measure levels of void (i.e., low or high), for a rental property to remain without income flow for such a period is potentially an investment risk (loss of revenue). In some locations, security services are usually engaged to avoid cases of illegal occupation or acts of vandalism, thereby adding to the cost of maintenance.

Several factors contribute to voids in the property market, as identified in existing literature. According to Remoy (2010), social amenities play a role in encouraging residential users within particular locations to relocate from one property to another, leaving some properties

completely void. The study suggests that road infrastructure, parking space, and the property's adaptability to changes also affect void rates in residential properties. However, the causes of voids and the level of effect may vary across different locations. Thus, while social amenities are considered similar in their impacts, specific locations may exhibit variations. Killilea and Ward (2013) explored reasons for property voids and found that physical condition, social and cultural factors, economic dynamics driven by demand and supply, patterns of neighbourhood change, and residents' preferences were responsible for voids. In this case, culture, consumer preferences, and neighbourhood changes are recognised here as distinct factors from those of Remoy (2010). Oladokun (2011), on the other hand, identified causes of void as ethnic differential (segregation), followed by socio-economic factors (tenants' occupation and income), marital status and family composition, level of education, and religion. Nigeria is a multi-ethnic and tribal nation, and this criterion is in some instances used to segregate prospective tenants in preference to void in some property markets. Hence, the Okota property market has indicated ethnic differences and religion among the demographic structure of users as void factors. Furthermore, fictitious rents, building finishes, and labour migration also cause voids (Akalemeaku and Egbenta, 2013).

Furthermore, Hendershott Lizieri and Matyski (2014) posited that eviction of tenants, abandonment of property, locations of certain residential buildings, and transfers of sitting tenants could also result in vacancies. In Minna, for instance, Ogunbajo et al. (2018) consider externalities such as proximity to certain facilities, like health care, shopping centres, and major roads, as well as infrastructure such as electricity, as determinants of void periods. In Nigeria, generally, the void in residential properties have been attributed mainly to the economy and mostly fictitious rent levels that are not in congruence with the local market economy. Moreover, unilateral rent reviews by the property owners without corresponding improvements on the condition of the property create apathy among tenants, usually leading to increased rent defaults (Kemiki et al., 2018) and possible evictions. The impact of some of these factors prolongs void periods in certain locations.

RESEARCH METHODOLOGY

A quantitative research design is adopted for this study with a survey approach, where a well-structured questionnaire was developed for data collection (Creswell and Creswell, 2018). The questionnaire elicits specific information on the residential units in line with the objectives of the study. These were the sizes of the accommodation in terms of the number of bedrooms; when the last tenant vacates the building; how long the building has remained vacant; and why. Clustered random sampling (CRS) was employed to select residential neighbourhoods across Minna for the survey, ensuring a comprehensive citywide sample from nearly all residential submarkets. Estate Surveyors and Valuers (ESVs), along with Local Estate Agents (LEAs), were contacted at their respective offices to identify the residential building. Landlords, who also serve as part of property management and reside near their properties, were included in the sample. Some landlords live on-site, occupying sections of the property such as apartment blocks or detached houses. Data regarding void periods was gathered from the ESVs, LEAs, and landlords over a four-week survey period (06-11-2023 to 07-12-2023), facilitated by four research assistants. A total of 1500 questionnaires were distributed based on the identified number of sampled residential units spread across 13 neighbourhoods using a purposive sampling method. The residential buildings were those that experienced voids between 2012 and 2022 and 1129 questionnaires were filled and returned, accounting for about 75% of the response rate from the survey. Information relating to specific periods when some buildings became vacant or tenants left could not be provided, especially from some landlords and LEAs who do not have accurate or, in some cases, no available records due to their literacy levels.

The residential property types sampled were tenements, 1 bedroom and 2-bedroom apartments due to their predominance in the rental market, as well as 3-bedroom bungalows.

Data obtained on the void periods were collated for each of the sampled residential units in all the neighbourhoods, and mean void periods (MVPs) were computed. Levene's test of homogeneity of variance and Welch adjusted analysis of variance were used to test for significant differences in the void periods of each of the residential building types across the neighbourhoods. Post-hoc follow-up procedures were conducted to compare the outcome in order to determine which pairs of the 13 neighbourhoods differ significantly in terms of higher or lower void periods and in which of the residential building types (i.e. neighbourhood-level differences). In order to achieve this, the Games Howell Post-Hoc test was employed.

RESULTS AND DISCUSSION

The mean void periods (in months) for all the sampled residential building types in each of the neighbourhoods is presented in the Table 1 below.

Table 1: Level of MVPs (in months) for different house types across neighbourhoods

Neighbourhood	Tenement	One bedroom apartment	Two-bedroom bungalow	Three-bedroom bungalow
Barkin Saleh	3.76	6.61	6.67	13.22
Maikunkele	4.61	4.97	7.21	8.33
Chanchaga	6.49	5.41	5.73	8.10
Kpakungu	3.66	6.33	5.46	8.25
Maitumbi	5.72	7.12	6.08	6.36
Gbaganu	3.42	5.06	4.08	4.00
Nyikangbe	2.33	5.67	3.94	7.67
Shango	6.86	6.85	5.67	6.25
Sauka Kahuta	4.89	5.24	7.33	11.00
Tayi Village	7.63	3.91	5.39	3.79
Tudun Fulani	3.95	5.33	3.00	5.50
Fadikpe	4.22	3.25	3.67	3.86
Gidan Mangoro	7.19	5.86	3.40	10.00
All Neighbourhoods	4.87	5.47	5.13	7.03

The values in Table 1 show that, at an aggregate level, 3-bedroom houses have the highest MVP of 7.03 months, followed by 1-bedroom apartments with an MVP of 5.47 months. This is in contrast with tenement buildings, which have the lowest MVP of 4.87 months, and 2-bedroom bungalows, which have an MVP of 5.13 months. With the rising cost of rental housing, 3 bedrooms are becoming practically unaffordable to a substantial number of prospective tenants; hence, this accommodation type is vulnerable to higher void periods comparatively. At a disaggregated level, the 3-bedroom bungalows still show significantly higher MVPs among the 13 neighbourhoods, with Barkin Saleh, Sauka Kahuta, and Gidan Mangoro indicating MVPs of 10 months and above. Tayi Village and Fadikpe residential neighbourhoods are the few exceptions, with lower MVPs of 3.79 and 3.89 for 3-bedroom houses. These show areas with less influence from externalities and largely inhabited by the local tribes with relatively affordable housing rent. Families also with large households prefer them. While for tenement buildings, Tayi Village, Gidan Mangoro, and Shango have higher MVPs of 7.63 months, 7.19 months, and 6.86 months, respectively. This is incongruent with Nyikangbe, Gbeganu, and Kpakungu, which have lower MVPs of 2.33 months, 3.42 months, and 3.66 months, respectively.

One-bedroom apartments recorded higher MVPs in Maitumbi (7.12 months) and Shango (6.85 months), while lower MVPs were recorded in Fadikpe (3.25 months) and Tayi village (3.91

months). The result for two-bedroom houses indicates that Sauka Kahuta has the highest MVP of 7.33 months, while Tudun Fulani recorded the lowest with a 3-month MVP.

Tests for Differences in MVPs of residential buildings across the neighbourhoods

The data were subjected to further analysis in order to test for significant differences in the void periods of each residential building type across the neighbourhoods. To achieve this with the nature of the data prepared, the analysis of variance technique was used, and a starting point for the analysis was Levene's test of homogeneity of variances. This is because the homogeneity of variance is a stringent assumption underlying the use of the one-way ANOVA.

Table 2: Levene test for homogeneity of variances of void periods

House Type	Levene Statistic	df1	df2	Sig.
Tenement Buildings	6.071	12	460	.000
One bedroom apartment	4.312	12	341	.000
Two-bedroom bungalows	2.054	12	150	.023
Three-bedroom bungalows	4.377	12	131	.000

Table 2 presents a Levene statistic value of 6.071 for tenement buildings, 4.312 for 1-bedroom apartments, 2.054 for 2-bedroom bungalows, and 4.377 for 3-bedroom bungalows. The corresponding p-values in all four cases are less than the alpha level, i.e., p (0.000) < α (0.05), thus indicating that the variances (of the void period for the four house types) are not homogenous. In other words, the homogeneity of variances assumption had been violated. The Welch ANOVA was therefore carried out in place of the one-way ANOVA in order to arrive at accurate results (Spiegel and Stephen, 2006; Laerd Statistics, 2013; Zaiontz, 2016). The result of the Welch ANOVA is presented in Table 3 below.

The result in Table 3 shows a Welch-adjusted ***F*** ratio of 28.482 for tenement buildings and 8.555 for 1-bedroom apartments. Both accommodations had corresponding p-values of 0.000., while 2-bedroom bungalows and 3-bedroom bungalows recorded Welch-adjusted ***F*** ratios of 9.223 and 23.133, respectively. These two residential building types also had p-values of 0.000. The p-values did not exceed the significance level ($p < 0.05$), thus implying that the adjusted ***F*** ratios were significant at 0.05 alpha levels. These, therefore, translate to a significant difference in the MVPs of tenement buildings, 1-bedroom apartments, 2-bedroom apartments, and 3-bedroom bungalows across the neighbourhoods of the study area.

Table 3: Welch test for equality of means for void periods

House Type	Welch Statistic[a]	df1	df2	Sig.
Tenement buildings	28.482	12	140.358	.000
One bedroom apartment	8.555	12	94.315	.000
Two-bedroom bungalow	9.223	12	45.57	.000
Three-bedroom bungalow	23.133	12	34.848	.000

a. Asymptotically F distributed.

Further, the Games Howell post hoc test was conducted to compare and determine which pairs of the neighbourhoods differed significantly in their MVPs. This is in line with Barnes and Lewin's (2005) assertion that ANOVA can only tell whether groups in a sample differ significantly, but it cannot specify which groups differ. Neighbourhoods whose mean difference had corresponding p-values that were less than 0.05 (implying significant differences) are extracted from the overall test results and presented in Tables 4–7.

The outcome of the Games Howell post hoc test presented in Table 4 shows that the MVPs for tenement buildings in Barkin Saleh differ significantly from those of Chanchaga, Maitumbi, Tayi Village, and Gidan Mangoro. Also, the MVPs of tenement buildings in Chanchaga differ

significantly from those of Kpakungu, Gbeganu, and Fadikpe, among others. These are evidenced by the p-values in the 5th column of the table, which are less than the alpha level (0.05). Meanwhile, the result of the post hoc test in Table 5 below shows that the MVPS for 1-bedroom apartments in Tayi Village differ significantly from those of Barkin Saleh, Maitumbi, Nyikangbe, Shango, and Gidan Mangoro. Fadikpe, on the other hand, differs significantly in MVPs of 1-bedroom apartments from all the other neighbourhoods except for Tudun Fulani, Sauka Kahuta, and Tayi Village.

Table 4: Neighbourhoods that differ significantly in the void period of tenement buildings

(I) Neighbourhood		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Barkin saleh	Chanchaga	-2.721	.599	.001	-4.77	-.67
	Maitumbi	-1.956	.518	.016	-3.72	-.19
	Tayi Village	-3.860	.602	.000	-5.98	-1.74
	Gidan Mangoro	-3.423	.482	.000	-5.07	-1.78
Chanchaga	Kpakungu	2.825	.573	.000	.86	4.79
	Gbeganu	3.069	.748	.018	.34	5.80
	Fadikpe	2.269	.638	.035	.08	4.46
Kpakungu	Maitumbi	-2.060	.487	.003	-3.71	-.40
	Tayi Village	-3.964	.576	.000	-6.01	-1.92
	Gidan Mangoro	-3.526	.449	.000	-5.06	-2.00
Gbeganu	Tayi Village	-4.208	.750	.001	-6.98	-1.44
	Gidan Mangoro	-3.771	.658	.001	-6.30	-1.24
Nyikangbe	Maikunkele	-2.274	.520	.006	-4.12	-.43
	Chanchaga	-4.152	.494	.000	-5.88	-2.43
	Maitumbi	-3.388	.391	.000	-4.74	-2.04
	Shango	-4.528	.370	.000	-5.81	-3.25
	Sauka Kahuta	-2.553	.404	.000	-3.95	-1.16
	Tayi Village	-5.292	.497	.000	-7.14	-3.44
	Tudun Fulani	-1.616	.424	.016	-3.06	-.17
	Fadikpe	-1.883	.493	.020	-3.60	-.17
	Gidan Mangoro	-4.854	.342	.000	-6.04	-3.66
Shango	Barkin Saleh	3.096	.502	.000	1.38	4.81
	Maikunkele	2.254	.573	.015	.26	4.25
	Kpakungu	3.200	.470	.000	1.60	4.80
	Gbeganu	3.444	.673	.004	.89	6.00
	Nyikangbe	4.528	.370	.000	3.25	5.81
	Sauka Kahuta	1.975	.470	.004	.37	3.58
	Tudun Fulani	2.912	.487	.000	1.26	4.57
	Fadikpe	2.645	.548	.001	.76	4.53
Tayi Village	Barkin Saleh	3.860	.602	.000	1.74	5.98
	Maikunkele	3.018	.662	.003	.69	5.35
	Kpakungu	3.964	.576	.000	1.92	6.01
	Gbeganu	4.208	.750	.001	1.44	6.98
	Nyikangbe	5.292	.497	.000	3.44	7.14
	Sauka Kahuta	2.739	.575	.002	.69	4.79
	Tudun Fulani	3.676	.589	.000	1.59	5.76
	Fadikpe	3.409	.640	.000	1.16	5.66
Tudun Fulani	Chanchaga	-2.537	.586	.003	-4.54	-.53
	Maitumbi	-1.772	.503	.035	-3.48	-.06
	Gidan Mangoro	-3.238	.466	.000	-4.83	-1.65
Gidan Mangoro	Maikunkele	2.580	.555	.002	.64	4.52
	Sauka Kahuta	2.301	.449	.000	.76	3.84
	Fadikpe	2.971	.530	.000	1.14	4.80

Table 5: Neighbourhoods that differ significantly in void periods of 1-bedroom apartments

(I) Neighbourhood		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Tayi village	Barkin Saleh	-2.702	.541	.001	-4.65	-.75
	Maitumbi	-3.209	.660	.003	-5.64	-.78
	Nyikangbe	-1.758	.425	.006	-3.22	-.30
	Shango	-2.939	.738	.014	-5.53	-.35
	Gidan Mangoro	-1.955	.501	.013	-3.67	-.24
Fadikpe	Barkin Saleh	-3.361	.528	.000	-5.29	-1.43
	Maikunkele	-1.721	.391	.005	-3.10	-.34
	Chanchaga	-2.156	.494	.005	-3.89	-.42
	Kpakungu	-3.083	.651	.021	-5.77	-.40
	Maitumbi	-3.868	.650	.000	-6.28	-1.46
	Gbeganu	-1.806	.443	.009	-3.34	-.27
	Nyikangbe	-2.417	.408	.000	-3.85	-.99
	Shango	-3.598	.728	.001	-6.17	-1.03
	Gidan Mangoro	-2.614	.487	.000	-4.30	-.92

Further, the outcome presented in Table 6 below suggests that the MVPs for 2-bedroom houses in Barkin Saleh differ significantly from those of Maikunkele, Maitumbi, and Sauka Kahuta. Also, void periods in Tudun Fulani differ significantly from those in Barkin Saleh, Maikunkele, Chanchaga, Kpakungu, Maitumbi, Sauka Kahuta, and Tayi village, while those in Fadikpe differ significantly from those in Maikunkele, Maitumbi, and Sauka Kahuta.

Table 6: Neighbourhoods that differ significantly in the MVPs of 2-bedroom bungalows

(I) Neighbourhood		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nyikangbe	Maikunkele	-3.270	.868	.045	-6.49	-.04
	Maitumbi	-2.132	.583	.044	-4.23	-.03
	Sauka Kahuta	-3.389	.790	.025	-6.47	-.31
Tudun Fulani	Barkin Saleh	-3.667	.757	.023	-6.89	-.44
	Maikunkele	-4.214	.787	.004	-7.27	-1.16
	Chanchaga	-2.727	.597	.019	-5.10	-.35
	Kpakungu	-2.462	.590	.029	-4.74	-.18
	Maitumbi	-3.077	.453	.000	-4.79	-1.37
	Sauka Kahuta	-4.333	.700	.004	-7.30	-1.37
	Tayi village	-2.391	.441	.000	-3.97	-.81
Fadikpe	Maikunkele	-3.548	.851	.021	-6.73	-.36
	Maitumbi	-2.410	.557	.009	-4.42	-.40
	Sauka Kahuta	-3.667	.771	.013	-6.71	-.62

For the 3-bedroom residential buildings, an extracted result from the Games Howell post hoc test reveals that the neighbourhoods differ significantly in their MVPs in the study area, as indicated by the result presented in Table 7 below.

Table 7: Neighbourhoods with differed MVPs for 3-bedroom bungalows

(I) Neighbourhood		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Barkin saleh	Maikunkele	4.889	.97	.010	0.99	8.79
	Chanchaga	5.122	1.01	.008	1.13	9.12
	Kpakungu	4.972	1.08	.015	0.75	9.19
	Maitumbi	6.865	.99	.000	2.93	10.80
	Nyikangbe	5.556	1.39	.041	0.16	10.95
	Shango	6.972	1.12	.000	2.69	11.25
	Tayi Village	9.437	.895	.000	5.61	13.26
	Tudun Fulani	7.722	1.09	.000	3.38	12.07
	Fadikpe	9.365	.906	.000	5.54	13.19
Gbeganu	Barkin Saleh	-9.222	1.05	.000	-13.32	-5.13
	Maikunkele	-4.333	.736	.001	-7.14	-1.53
	Chanchaga	-4.100	.795	.003	-7.11	-1.09
	Kpakungu	-4.250	.880	.009	-7.66	-.84
	Sauka Kahuta	-7.000	.898	.000	-10.29	-3.71
Sauka Kahuta	Maitumbi	4.643	.829	.000	1.63	7.65
	Shango	4.750	.983	.003	1.16	8.34
	Tudun Fulani	5.500	.949	.002	1.82	9.18
Tayi village	Maikunkele	-4.548	.494	.000	-6.42	-2.67
	Chanchaga	-4.314	.578	.000	-6.62	-2.01
	Kpakungu	-4.464	.690	.004	-7.44	-1.49
	Maitumbi	-2.571	.543	.007	-4.61	-.53
	Sauka Kahuta	-7.214	.712	.000	-9.90	-4.53
Fadikpe	Maikunkele	-4.476	.514	.000	-6.40	-2.56
	Chanchaga	-4.243	.595	.000	-6.57	-1.91
	Kpakungu	-4.393	.705	.004	-7.37	-1.41
	Maitumbi	-2.500	.561	.010	-4.58	-.42
	Sauka Kahuta	-7.143	.726	.000	-9.85	-4.43

The 3rd column of Table 7 shows mean differences (between groups of neighbourhoods) that are significant at the 0.05 level. The analysis implies that these groups of neighbourhoods differed significantly in the MVPs for 3-bedroom bungalows in Minna.

Results of analysis revealed an aggregate void period of 4.87 months for tenement buildings, 5.47 months for 1-bedroom apartments, 5.13 months for 2-bedroom bungalows, and 7.03 months for 3-bedroom bungalows across all the sampled neighbourhoods (see Table 1). The trend exhibited by the result has indicated that the bigger the size of accommodation, the higher the MVP, which can essentially be explained by the poor performance of the local economy and the high housing rent in the market (Kemiki et al., 2018). Though on comparison, despite the significant differences in the MVPs of 2 bedrooms in Barkin Saleh and Tudun Fulani from other neighbourhoods (see Table 6), on aggregate, they have a lower MVPs than the 1-bedroom houses especially in 6 of the neighbourhoods studied. This follows that due to the predominance of 1-bedroom in the market as well as an abridge accommodation for those in tenement and 2-bedroom houses; they tend to be expensive in some neighbourhoods in terms of high rent. Results further showed that the MVPs of tenement buildings in six neighbourhoods; Barkin Saleh, Maikunkele, Kpakungu, Gbeganu, Nyikangbe, Tudun Fulani and Fadikpe, were lower than the aggregate across the study area. This outcome is an indication of a high demand for tenement buildings in those neighbourhoods as well as influence of certain externalities like proximity to road arterials and shopping centres especially in the case of Barkin Saleh, Kpakungu and Gbeganu. Further, the MVPs for 2- and 3-bedroom bungalows in 5 of the sampled neighbourhoods were lower than the aggregate mean for these categories of houses across all the neighbourhoods. However, the MVPs for each of the sampled house types were found to differ significantly across neighbourhoods in the study area. The least void periods were recorded in Nyikangbe, Fadikpe, Tudun Fulani, and Tayi Village for tenement buildings, 1-bedroom apartments, 2- and 3-bedroom houses respectively. This suggests among others, a fairly high demand for the respective house types and the rental values of accommodations in the neighbourhoods are within the average affordability level compared with others.

Variations in the void periods of similar residential dwelling units across neighbourhoods can be attributed to several factors. Firstly, population growth resulting from the location of prominent features within the areas plays a significant role. Secondly, there is a general high demand for residential accommodation due to personal tastes and preferences. This demand is particularly evident in neighbourhoods such as Gbaganu, Nyikangbe, and Sauka Kahuta. Thirdly, affordable rents contribute to the variations in void periods. Lastly, the availability of ancillary facilities, as observed in Tayi village and Fadikpe, among others, also impacts void periods. An earlier study conducted by Ogunbajo et al. (2018) in the study area revealed that proximity to certain externalities and other favourable locational attributes, along with active marketing of housing units in specific neighbourhoods, could explain the variations in the MVPs across the sampled neighbourhoods.

CONCLUSION

The duration of void periods may vary across different property markets and property types, even within the same market, as a result of variations in market conditions. This has been demonstrated by the current study findings; MVPs range between 4 and 7 months and tend to increase with the size of accommodations in various buildings. This indicates a relatively high void period in the residential property market. This will affect investors negatively during this void period, as they will experience a loss of income flow. It will further escalate the consequences if the houses were either developed or purchased through a mortgage that is

typically repaid on a monthly basis. These findings align with the observations from the Okota residential property market, as reported by Oladokun (2011). Furthermore, the variance in MVPs among similar residential accommodations highlights the significant differentiation that exists even among neighbourhoods.

The study recommends that the government take proactive measures to provide and maintain amenities within neighbourhoods. By doing so, these areas would become more appealing, attracting a higher number of residents. External factors, such as well-designed road networks, efficient waste management facilities, and robust security, are known to draw families to such locations. Consequently, this would reduce the duration of voids in residential buildings, ensuring a timely and more profitable return on the investments made in these properties.

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PROP-TECH TREND IN NIGERIAN REAL ESTATE PRACTICE: ADOPTION AND CHALLENGES

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As technological innovation keeps advancing, it becomes imperative for professionals to keep abreast with the use of emerging technologies to ensure global best practices. We examine the progression in the knowledge and adoption of property technology as they keep evolving in Nigerian real estate practice, aiming to provide useful information that could enhance seamless tech-enabled real estate practice and guide institutional/policy direction. The experts in the real estate profession such as public estate office holders, estate firms, and academics in Lagos State constitute the study population. The study adopts purposive sampling techniques, and questionnaires were used to collect data. A total of one hundred and nine (109) questionnaires were distributed, properly filled, and retrieved, as follows: private (59), public (32), academic (18). The responses were analysed using statistical tools such as comparative mean score, mean rank, simple t-tests, and Kruskal-Wallis tests. We find appreciable progressive levels of knowledge about emerging property technologies, with a noticeable influence of age and experience of the experts. However, a drastic decline in the level of usage is observed as the latest version (Prop Tech 3.0) of property technology keeps evolving. The prevailing issues connected with education/training, data quality/databank, financial/operational cost, infrastructure, and expertise/specialist remain major contributors to setbacks experienced in the level of adoption of technology innovation in real estate practice. The study concludes that as prop-tech keeps advancing, the level of knowledge and adoption is declining among the members of the profession, signalling the need for deliberate commitment to capacity building through continuous education/training if real estate practice is to remain relevant in the fast-changing technology business environment.

Keywords: Nigeria, property technology (prop-tech), real estate

INTRODUCTION

In recent times, there has been remarkable progression in the development of innovative technologies across all fields of professions. The noticeable advancements include artificial intelligence, big data, telemedicine, blockchain, the Internet of Things (IoT), robotics, and smart devices (Khang et al., 2024). The continuous emergence of these innovative technologies is linked to dynamic and sophisticated societal needs, with more emphasis on timing, accuracy, and reliability of service precision. However, the new trend of technology devices is known for making work easier to perform in an

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effective, efficient, and accurate manner compared to conventional tools and human effort (Hapsari and Puspitasari, 2024; Bouchareb, 2023). In construction companies, Dobrucali et al. (2024) and Maqbool et al. (2023) recorded a progressive adoption of innovative technologies. This has resulted in a paradigm shift towards the use of innovative technologies, but the rate of adoption varies across fields and countries.

The real estate industry is an information-driven market. The emergence of innovative technologies has enhanced transactions in different areas of the service industry. For instance, virtual reality (VR) and augmented reality (AR) improve customer experiences, the Internet of Things (IoT) is used in managing large-scale commercial properties, drones for virtual property inspections, fintech and blockchain technologies for property development financing analysis, GIS-based technology for property surveillance and measurement precision, and algorithm-based technologies such as AI and Big Data have helped in making experiences better for the players in the service industry (Root et al., 2023; Udo et al., 2024). In the Nigerian property market, there has been limited examination of the progression in the trend of emerging property technologies and their level of adoption. The majority of existing local studies focus on ICT in general in relation to real estate practice, covering its application (Akeju et al., 2021; Akinola et al., 2021; Fateye et al., 2020; Oyetunji et al., 2018), factors influencing its adoption (Oyetunji et al., 2018; Adeyemo et al., 2015), implications (George and Olurotimi, 2023; Aihie, 2019; Babatunde and Ajayi, 2018), and challenges (Oluwunmi and Agara, 2023; Ojo et al., 2021; Munawar et. al., 2020)

However, our study differs from previous works in several ways. Firstly, most existing studies base their findings on literature reviews and are non-empirical. Secondly, we examine progression in the knowledge and use of property technology specifically, categorizing them based on their years of emergence according to EDU (2021), such as Prop Tech 1.0 (earliest), Prop Tech 2.0 (middle), and Prop Tech 3.0 (latest). Additionally, the majority of local studies primarily focus on practising estate surveyors alone, neglecting other members of the profession, such as public estate officers and academics, whose differences in their socioeconomic status could provide broader perspectives on the issues addressed. Our study addresses two major research questions: the trajectory of emerging property technologies, and the progression in the level of awareness and adoption of evolving property technology among professionals in the real estate field. The study contributes to the existing literature by providing valuable insights into the current state and future trajectory of technological advancement in real estate practice.

LITERATURE REVIEW

An overview of property technology in real estate industry

Property Technology (Prop-Tech) is a relatively young area in real estate practice and is still evolving (Ullah et al., 2018). It involves the massive deployment of innovative property-related technologies to perform various property activities such as acquisitions, operations, management, maintenance, valuation, and appraisal for informed investment decision-making that conforms to global best practices. Prop-Tech represents the global digitalization of the real estate industry through technological innovations that make real estate practices seamless, efficient, and effective (Bouchareb 2023, Shukla et al., 2019). These new property technologies provide efficient ways of collecting, compiling, computing, analysing, presenting, and interpreting complex and enormous property data.