



Supply and demand approaches to the urban residential property prices determination; transactions evidence from Nigeria

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ABSTRACT

This study provided an empirical framework that isolates the supply and demand perspectives in urban residential property transactions towards removing the information shield and asymmetry nature of property transaction information in Nigeria. A three-stage classical panel longitudinal design was adopted through feedback from completed transaction data on residential properties from the licensed estate agents. The study provided balanced and complete transaction information desired by the parties to any type of residential property transaction and bridged the wide gap between transaction expectation and actualization to prevent improper signalling in property transaction prescriptions. The study outcome generated vital indices and metrics for creating a complete property transaction database for the attraction of international professionals to participate in Nigeria's urban property market transactions. This study is the first one in Nigeria to link the asking prices on sales and rental transactions in residential property transactions from the start to the conclusion.

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Introduction

Property market players have focused their investment in most urban cities of the world mainly due to the economic activities and vibrancy of property markets therein (Olaleye, 2016). Reward from investment is the benefit of investing in the property which may be the price that the property is eventually sold by the seller or the rents previously collected on the property. Price is the amount the owner sold his property, which may also be a determinant of his reward on the property as an object of investment. Price may be the combination of property acquisition cost plus the expected profit. Impliedly, a reward

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may be a product of either the sales price or rental collections on the property or the combination of both.

Since the reward of property investment is obviously determined in the market, knowledge of the market situation, characteristics, and prospects is vital to successful investment decision making. Among the market, knowledge required is the prices that properties are likely to let or sell for. However, the imperfect state and the asymmetry nature of information about the property market will necessitate a willing owner/landlord or buyer/tenant to require the services of a broker otherwise called property agent Hoesli and Lekander (2008), Fereidouni (2012), and (Luchtenberg, Seiler, & Sun, 2018). To make their task easy, most property agents list such commissioned properties on the professional marketing platforms with stated asking prices (Luchtenberg et al., 2018; Olapade, Ekemode, & Olaleye, 2019).

The information provided by most prior studies is on the asking prices that residential property owners can obtain, especially in countries like the US and UK, specifically on the relationship among asking price, time on market (TOM), and eventual sale price (Yavas & Yang, 1995; Knight, 2002; Orr, Dunse, & Martin, 2003; Brown & Foo, 2004; Allen et al., 2009; McGreal, Adair, Brown, & Webb, 2009; Gatzlaff & Liu, 2013; Beracha & Seiler, 2013; Han & Strange, 2014; Fitzgerald, David, McIntosh, & Barret, 2019; Saull, Baum, & Braesemann, 2020).

In Nigeria, Olaleye, Ekemode, and Olapade (2015); Agboola and Scofield (2018); and Onwuanyi (2018) are related to studies of local extraction. Other areas that have been focused on include, high sale/over asking price (Gholi Khosravi, 2007; Velma, Waller, & Turnbull, 2019); institutional effect influencing seller's presale decision (Li & Chau, 2019); impact of property agent on property market (Fereidouni, 2012); causes and effect of asking price revision on the sale price and TOM (Knight, 2002); conflict of interest between property seller and agent (David, Kluger, & Miller, 1991); change of estate agent before the conclusion of sale's transaction (Daneshvary & Clauretje, 2013; Hayunga & Pace, 2016; Horowitz, 1992).

Oloke, Olawale, and Oni (2017) and Onwuanyi (2018) had a similar direction in Nigeria. The studies focused on the causes of mismatch of asking price and sale price by comparing the asking prices of two urban centres, respectively. The focus of these studies relates to property sales transactions from the perspective of seller's agents (supply side). However, rental and sale markets as well as demand and supply sides of the property market exhibit varying characteristics which must be comprehended differently in order to avoid error in assumptions.

Therefore, market information on both sides of the property market requires a thorough investigation for a better understanding of the true and unbiased market situation, and that is the essence of this study.

Compared to the developed countries, however the Nigerian property market is immature characterized by weak data transparency (Olaleye & Adebata, 2019; Olapade et al., 2019). This can be attributed to the secrecy of transaction data as a result of owners' non-disclosure of sale price data (Agboola & Scofield, 2018) and the lack of centralized multiple listing of properties where the concluded transaction prices can be harvested. This market immaturity has been hindering the collection of data for studies that can combine both rental and sale transactions on the property for the purpose of providing balanced and effective buyer/tenant and seller/landlord information. Even in the

developed countries, there is still a deficit of knowledge on property markets from the perspectives of the seller/landlord and buyer/tenant relative to the asking/actual prices of properties (Agboola & Scofield, 2018).

However, most urban property markets in Nigeria have property transaction social platforms where data on asking prices/rents can be made useful through appropriate screening measures, none of such are available for actual/transaction prices (Olapade & Olaleye, 2018). The first effort to have a property database in Nigeria was made with the introduction of a property listing platform by the Nigerian Institution of Estate Surveyors and Valuers (NIESV), in 2013, but this is seen to be a halfway approach and incomplete assignment (Nigerian Institution of Estate Surveyors and Valuers NIESV, 2013).

This is because this property listing platform merely starts the transaction process without following up on the transaction conclusion (Nigerian Institution of Estate Surveyors and Valuers NIESV, 2013). There is therefore a lack of feedback among the agents on the achievement level of the asking prices on the achieved prices of residential property in Nigeria, reaffirming its immaturity in this regard.

Against this background, the present study attempts to respond to the following questions: can feedback from the sale transaction be applied to the rental transaction? How do supply and demand markets respond to rental or sales transaction matters? Who stays longer in the residential property market: supply or demand? To what extent can the asking prices predict the actual prices? The study is divided into six sections. After this introduction comes the review of relevant literature to asking prices of property in section two. This is followed by methodology in section three. Next to the methodology are the research findings and their discussion in the fourth section. The study is briefly summarized and concluded in the fifth section.

Review of literature

The theory of price otherwise called the price theory is an economic theory or micro-economic principle that states that the price for any specific good or service is based on the relationship between its supply and demand (French & Wiseman, 2003). This stressed that price is not a unilateral decision by one party, but the joint decision by both parties to a transaction. It posits that the point at which the benefit gained from those who demand the entity meets the seller's marginal costs is the most optimal market price for that good or service.

The goal is to achieve the equilibrium where the quantity of the goods or services provided matches the demand of the corresponding market and its ability to acquire the good or service. It also allows for price adjustments as market conditions change. Supply denotes the number of products or services that the market can provide. Demand applies to the market's desire for tangible or intangible goods. Demand may fluctuate depending on a variety of factors, like whether an improved version of a product is available or if a product is no longer needed. Demand can also be impacted by an item's perceived value by the consumer market.

Equilibrium takes place when the total number of items available (the supply) is consumed by potential customers. If a price is too high, customers may avoid the goods or services. This would result in excess supply. In contrast, if a price is too low,

demand may significantly outweigh the available supply. Economists use price theory to find the selling price that brings supply and demand as close to equilibrium as possible.

According to Hayunga and Pace (2016), the reasons why sellers are willing to sell their properties include cash/liquidity constraints, the level of urgency, job relocation, fear of foreclosure, and change in family status. In Nigeria, it may seem that real estate agents make little or no efforts to find out why the owners intend to sell or let their real estate.

Ideal property market transaction information should embrace sales and rentals by the inclusion of demand and supply in the transaction. At present, the survey of the literature shows that there is incomplete and imbalance general property market transaction information as shown in Figure 1.

Literature related to property asking prices is mainly on the purchase price, list price, TOM, and sales price, reflecting only the sellers' information, but excluding the buyers' information (Velma et al., 2019; Orr et al., 2003; Olaleye et al., 2015; McGreal et al., 2009; Knight, 2002 among others). Less emphasis was on a rental transaction and other related property market thematic studies such as the relationship and effects of asking rent on the actual rent and the relationship between the asking sale price/rent and the actual sale price/rent. This study is an attempt to have complete and balanced property transaction information towards generating a reliable property transaction database in Nigeria.

In the property markets, property agents impact prices and rents through the commission fee to be received by them, their speculative activities (otherwise called property banking), and competition amongst them just to impress the sellers. Growth in residential prices and rents were therefore spurred by the increased number of real estate agents and their speculative activities in the Iranian real estate market (Gholi Khosravi, 2007). This study concluded that estate agents' commission has nothing to do with high prices and rent on housing.

According to Arnold (1999), three commonly employed means of establishing transaction prices of property are the listed prices, auctions, and bargaining. This implied that the listed/asking price is the basis of the market mechanism which eventually establishes a transaction price. It is the appraised value that gives information signal to potential buyers/renters and expectations to the property owner. By means of asking price, the property is placed on the market as an experiment i.e. offer subject to acceptance or rejection.

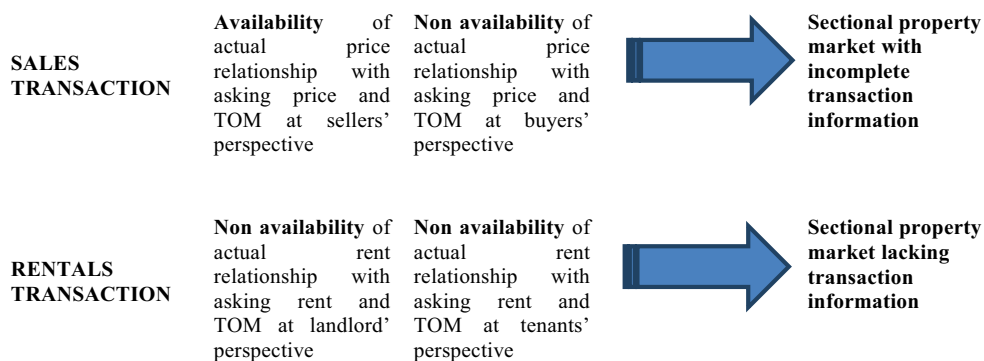


Figure 1. Incomplete and imbalance property market transaction information.

It plays an active role in directing the buyer search and has an effect on sales price, but is not indicative of actual value (Han & Strange, 2016). Although, it is relevant to private property transaction which dominates most developing nations' urban markets; it is also one of the bottlenecks to property liquidity (Agboola & Scofield, 2018). This has let Olaleye and Adebara (2019) reaffirm the state of immaturity of the Nigerian property market when they introduced the economic characteristics variables by re-examining the framework for determining property market maturity in Lagos.

When a property is put up for sale through bargaining, the expected outcome of the offer may be below, exact, or over the asking price in the offer (Albrecht, Gautier, & Vroman, 2014). The purchase price is the cost of acquisition of the offered-by-listing property by the buyer. The sale price is the seller's consideration for parting with his listed property for sale. The actual price is the same as the achieved price, i.e. the price that the property is finally sold by the seller to the buyer after the listed property bargain.

Merlo and Ortalo-Magne (2004) documented 96% of the asking price as the actual price in the UK in the mid-1990s while Han and Strange (2014) replicated the same 96% in the USA. The study of Case and Shiller (2003) exhibited 27.9% and 48.4% of the examined cases to have reflected the exact asking price matching with the sale price in 1988 and 2003 respectively. The case of overpricing of 14.9% was indicated by Merlo and Ortalo-Magne (2004) in the UK and 4% by Han and Strange (2014) in the US. In the same US (Central Virginia), Velma et al. (2019) documented an average of 34% of property sold at its asking price or above for the period of 2001–2015.

Stressing the inaccuracy of the asking price to the sale price, Horowitz (1992) and Olaleye et al. (2015) concluded that actual sales prices are more accurate than any predictions or asking price that can be obtained from hedonic price regression because while hedonic regression anticipates, the sales price is the actual achieved price. Therefore, factual information should be preferred to the probable one. This is the reason why the transaction-based data should be preferred to the appraisal-based data because forecasting of asking prices as a proxy of prices using any of the forecasting models is not an exact science and the derived prices cannot be used to equate the achieved/actual prices.

When setting their optimum list price, the seller needs to balance the potential marginal utility that comes from a higher price versus the marginal dis-utility of a longer TOM (Hayunga & Pace, 2016). Knight (2002) noted a review or change in the asking price of the listed property and found that 38.4% of the sampled listed properties were changed or reviewed before they were eventually sold. Could this result from the inaccuracy of appraisal or ambitious overpricing by the owners or absolute-dictate of the owner of listed properties?

TOM of the transaction is having a link between the asking and actual prices. Documented average TOM for sale of property from seller's agent perspective also abounds in the literature, but this may not fit as the same from buyer's agent perspective. According to Crosby and McAllister (2004), the TOM is more than 9 months in the UK. But Devaney and Scofield (2015) documented 104 days and 135 days for the buyer's agent and seller's agent respectively to transact the acquisition of property in the UK. Hayunga and Pace (2016) documented 28 weeks as the average TOM of property in the US market.

McGreal et al. (2009) concluded that the relationship between the sale price and TOM of property in the UK is complicated and irregular; while the sale price is influenced by

TOM, property selling at the list price or above are likely to have shorter marketing periods compared to those selling below the list price. However, Saull et al. (2020) investigation of the causes of delay in the commercial property transactions in the UK showed lack of up to date centralized and digitalised property information between the sellers and their agents (as it concerns the asking price) forms part of the causes of delay in the property transaction.

Olaleye et al. (2015) is one of the few studies focusing on the relationship between asking prices, TOM and sales prices of property from Nigeria's emerging property market point of view. The study used the transaction data on listed prices to analyse the relationship between asking price, TOM and sales price of residential property assets and determine the predictive capacity of asking prices and TOM on the eventual sale prices. The finding shows the average TOM of 4 months 26 days and a strong significant relationship between the asking price of properties and sales price and that asking price and TOM jointly explained 99% of the variation in the sale price. This study limited its scope to property sales in Lagos at the seller's perspective and it neither identifies asking rent on the property nor included the buyer's perspective in its analysis.

Agboola and Scofield (2018) explored the effect of formal and informal institutions (the government bodies and corporate/other private persons involved in property investment process) on the property investment process and how long it takes on average to transact the sale of commercial property in Lagos, Nigeria. The study documented 306 days as the Average Time of Completion (TOC). The study concluded that there is an imperfection in the formal institutions of title registration as evidenced by its longest time of 132 of the total 306 days. The study also emphasized that there is a difference between TOM and TOC and probably that explains the reason why there was a wide variance between the 306 days documented by Agboola and Scofield (2018) and the 4 months 26 days (146 days) documented by Olaleye et al. (2015) in the same study area.

Onwuanyi (2018) evaluated the extent to which the economic principles of price and value help to explain the asking price in the two Nigerian leading urban cities of Abuja and Lagos to resolve the question of whether the asking price variations of Abuja is higher than Lagos to ascertain the true indicator of property market buoyancy. The study found that property prices in Abuja were consistently higher than that of Lagos and that Abuja has higher vacancies and unsold properties after more than one year of listing. This study was limited to the asking price only. It did not compare the asking price with the eventual sales price to establish their variation extent if any.

A slight shift from the sales transaction towards extending to a rental transaction, Fereidouni (2012) investigated the role of real estate agents in the Iranian housing market from 2000 to 2003 to determine whether real estate agents can influence housing prices and rents. The study found that most Iranian estate agents together with their activities impact the prices and rents of housing in a significant positive stimulation. Although the study contributed to the literature in the brokerage practice and real estate rental listing, the study relied on data from the Government Ministry, but did not involve the professionals and the main data focus was on a number of real estate agents per province coupled with the total income they made as brokerage commission.

The study of Allen *et al.*, (2009) focused on TOM on rent of residential properties for single-family using 2 years (2003–2004) of rental data listings with transaction and withdrawal of MLS and brokers assistance from the Dallas-Fort worth Metro area of

Texas. The finding shows that the owners of property who set high asking rent relative to the expected contract one experienced a longer TOM. This study has been followed by others on the same theme of finding the existing link and relationships not between the asking rent and actual rent, but between the asking price and the actual price. Prior to Allen *et al.*, (2009), Stull (1978) examined asking rent strategies of the property owners and investigates the asking rent behaviour of its owners to understand the rental probability function. These studies are on the relationship between asking rent and TOM, behaviour of asking rent of property with no traceable nexus to the sale price for possible comparison.

All these studies suggest that there is more focus on the sale price of property even as they are restricted to the seller's perspective. There are few studies on rental prices. Whereas the property transaction market is supposed to be on sales and rentals involving supply and demand sides, the current situation is on sale and limited to the sellers' information. It is the view of this study that both sales and rental aspects as well as the demand and supply sides to a transaction should be presented to have a balanced understanding of the subject. There is concentration on the sellers' information rather than buyers', hence a need for an extension of research on the rental price and its information. This will enable the establishment of a relationship between asking prices (transaction expectation) and actual prices (transaction actualisation) for effective signals to all stakeholders in real estate transaction.

Data and methods

The data for the study were sourced from registered Estate Surveying and Valuation firms in Nigeria with a focus on the listed sale price and rent of residential properties located across 8 major urban centres in Nigeria. This was extracted from the two professional marketing platforms of Estate Surveying and Valuation in Nigeria: the real estate official listing service website of the Nigerian Institution of Estate Surveyors and Valuers (NIESV) available at www.niesv.com.ng and the unofficial but widely patronized "Estate Surveyors Emporium" on telegram, strictly for Nigerian Estate Surveyors and Valuers. Data on sales and rentals were combined in the listing by each estate firm for extraction; hence there was no clearly separated market for rental or sales transactions.

Classic panel longitudinal research design (see Uji, 2009) was adopted and modified with a three-stage data collection approach. The first stage is the extraction of listed properties for sale and letting on the property listing platforms on a continuous and progressive basis. This took place on a weekly basis from 6 November 2017 to 5 January 2020 adopting the Glower, Haurin, Donald, and Hendershott, Patric (1996) method of data extraction. The follow-up with the listing agents commenced from 13 November 2017 after the extraction and was concluded on 15 April 2020.

Data extracted from the listed properties include location, description, date of the listing, listing number (if any), asking rent or price, listing firm's contact: name, phone number, and e-mail address. The second stage was the collection of primary data through the self-administered structure questionnaire. The questionnaire from the listing firm of each extracted property was done (using the contact detail provided in their listing) via physical contact, emailing, and telephone conversation. The third stage involved cross-

examination of the tenants and buyers' agents for collection of transaction data of the eventually concluded transactions through the listing agents' link.

Variables for the primary data from seller/landlord agents include type of transaction (sale or rental), level of client's urgency to let or sell, listed/asking price or rent, number of times price or rent was revised, the eventual sale price or rent, date of eventual sale or letting, variation in the asking price/rent and actual price/rent, level of variations between them and causes of the variations.

Variables for primary data from the buyer/tenant agent include type of transaction (sale or rental), level of client's urgency to buy or rent, client's transaction (sale or rental) budget, number of times the budgeted sum for the purchase price or rent were revised, eventual purchase price or rent, date of eventual conclusion of purchase or rental transaction, variation in the budgeted sum and asking price or budgeted sum and actual price, level of variations between them and causes of variations. In line with the confidential request of the respondents, the listing number and contact details of the listing firms were consciously redacted to preserve the full identity of the property and their listing agents.

A total of 608 residential properties were extracted for the study period; however, clean up of the dataset reduces the population by 34 (due to dual-listed properties to avoid repetition). That brought a total of 574 listed properties (384 for sale and 190 for letting) for the study. At the close of harvest, transactions on 266 properties (170 for sale and 96 for letting) were yet to be concluded or have no complete data response from both seller/landlord and buyer/tenant agents altogether. Transactions on a total of 308 properties (214 for sale and 94 for letting) were successfully concluded and have complete required data needed and found useful for this study. Total of 168 sales transactions were found to be concluded by the estate agents, 46 were directly concluded by the sellers while 81 rental transactions were concluded by the estate agents, 13 were directly concluded by the landlords at the study areas during the study period.

Total enumeration of these properties was done in conformity with Watson (2001) with the use of questionnaires (containing open and closed-ended questions of nominal and ratio scale of measurement). The questionnaire on each of these properties was administered to the agents of both the seller/landlord and buyer/tenant with a follow-up to update the data.

Collected data were subjected to descriptive and inferential statistical analysis. Frequency, mean, ratio, correlation, and multiple regression were utilized for the processing and analysis of the data. TOM was calculated by finding the difference between the date that the property was listed and the time it was eventually let or sold (in days) at sellers' perspective while the number of days the search and conclusion of the transaction took the buyers' agent represents the TOM at the buyers' perspective as presented in Brown and Foo (2004).

The ratio of asking price/rent to the achieved price/rent was calculated in fraction, while the correlation was adopted to ascertain the degree of association among the variables. Achieved price/rent stands as the dependent variables while asking price/rent, budgeted price/rent, and TOM of sales and rentals stand as the predictor/independent variables. The model is presented as:

$$AP = \alpha + \beta_1 ASP + \beta_2 BDP + \beta_3 TOMSELL + \beta_4 TOMBUY + e \quad (1)$$

$$AR = \alpha + \beta_1 ASR + \beta_2 BDR + \beta_3 TOMLET + \beta_4 TOMRENT + e \quad (2)$$

Where AP/AR represents the achieved price or rent of the property (a dependent variable), α is the intercept of regression when all independent variables values are zero; β represents the coefficients of the independent variables (ASP/ASR , BDP/BDR , $TOMSELL/TOMLET$, and $TOMBUY/TOMRENT$). Where: ASP/ASR = the asking price/rent; BDP/BDR = the budgeted price/rent; $TOMSELL/TOMLET$ = the time on the market of the property for sale or for letting; e = the standard or regression error of the estimate which is taken to be zero.

Research findings and discussion

The findings and discussion of this study are presented in descriptive and inferential statistical output forms. While descriptive statistics present the frequency counts and ratio scale of data collected for the study, inferential statistics present the predictive ability of the study variables. Listing of rental and sale transactions on professional platforms in Nigeria is noted to be done in a combined form by the listing firms.

However, more properties were listed for sale than for letting. This may be as a result of the customary use of letting-board and other avenues available for letting transactions, making it less reliant on listing. Furthermore, the residential rental market tends to be larger, more liquid, involving a much lower investment for a much shorter period. This kind of market seems more efficient at setting prices than the kind of sales market with very different characteristics including avoidance of the use of sale board for its marketing.

Descriptive statistics

Table 1 display the responses from supply and demand sides with varying characteristics of the sales and rentals transactions. These include reasons for selling/letting and buying/renting; agents' involvement in the determination of transaction prices; the urgency of the parties to conclude the transaction; post property listing condition; price revision after listing; and causes of variations in the anticipated and actual prices. The summary of the findings basically indicates that ambitious overpricing and under-budgeting are the main causes of variation in the asking/budgeted prices of the property by the seller and the buyer respectively.

For the rental transaction, landlords' absolute dictate of asking rent was the cause of asking rent and actual rent variation (51.06%), but long TOM was its cause from tenants' perspective (47.87%). However, this finding is contrary to Saull et al. (2020) which attributed the long TOM of property to a lack of updated and centralized information for the accessibility of the stakeholders in property transactions. TOM should really be a match between the parties to a transaction and its variation may necessitate either of the parties to stay longer in the property market than the other.

Previous studies in Nigeria were unable to establish who stays longer in the property market, is it supply or demand? Findings in **Table 2** show the outcome of frequency counts/ratio scale descriptive statistics of prices, rents, and TOM interplay for the study. For the sale transaction, TOM of 160 days and 131 days was exhibited for the sellers and

Table 1. Responses from frequency count/nominal scale questions.

The variables	Purpose	THE RESPONSES		
RENTAL ANALYSIS	RENTALS	Yes	No	Undecided
Reason for letting or renting of the property?	Landlords' agent	62(65.96%)	12(12.77%)	20(21.28%)
	Tenants' agent	73(77.66%)	15(15.96%)	6(6.38%)
Agents involvement by the landlord/tenant in the determination of the asking/budgeted rent?	Landlords' agent	50(53.19%)	38(40.43%)	6(6.38%)
	Tenants' agent	36(38.30%)	54(57.45%)	4(4.25%)
Landlord/tenant's urgency to let/rent	Landlords' agent	22(23.30%)	60(63.83%)	12(12.77%)
	Tenants' agent	68(72.34%)	20(21.28%)	6(6.38%)
Positive variation in the condition of the property after listing it for rent	Landlords' agent	53(56.38%)	38(40.43%)	3(3.19%)
	Tenants' agent	30(31.91%)	61(64.89%)	3(3.19%)
Was there any rent revision after listing this property?	Landlords' agent	28(29.79%)	59(62.77%)	7(7.45%)
	Tenants' agent	72(76.60%)	20(21.28%)	2(2.12%)
Causes of variations in the asking/budgeted rent and the actual rent.	CAUSES OF VARIATION		Landlord's agent	Tenant's agent
	Effective bargaining with the landlord/tenant's agent		10(10.64%)	13(13.83%)
	Market favourable situation		04(4.26%)	09(9.57%)
	Urgency on the part of landlord/tenant		06(6.38%)	02(2.13%)
	Long marketing time advantage		5(5.32%)	45(47.87%)
	Inaccurate rental appraisal by the agent		13(13.83%)	04(4.26%)
	Absolute dictate by the landlord/tenant		48(51.06%)	03(3.19%)
	Ambitious overpricing/under budgeting by the landlord/tenant		08(8.51%)	18(19.15%)
SALES ANALYSIS	SALES	Yes	No	Undecided
Reason for selling or buying of the property?	Sellers' agent	161(75.23%)	40(18.69%)	13(6.07%)
	Buyers' agent	177(82.71%)	25(11.68%)	12(5.61%)
Agents' involvement in the determination of the asking/budgeted price?	Sellers' agent	8(3.74%)	204(95.32%)	2(0.9%)
	Buyers' agent	189(88.32%)	23(10.75%)	2(0.93%)
Seller/buyer's urgency to sell/buy	Sellers' agent	156(72.90%)	46(21.49%)	12(5.60%)
	Buyers' agent	39(18.22%)	166(77.57%)	9(4.21%)
Positive variation in the condition of the property after listing it for sale	Sellers' agent	168(78.50%)	32(14.95%)	14(6.54%)
	Buyers' agent	171(79.91%)	26(12.15%)	17(7.94%)
Any price revision after listing this property?	Sellers' agent	144(67.29%)	61(28.50%)	9(4.21%)
	Buyers' agent	156(72.89%)	48(22.43%)	10(4.67%)
Causes of variations in the asking/budgeted price and the actual price.	CAUSES OF VARIATION		Seller's agent	Buyer's agent
	Effective bargaining with the seller/buyer's agent		08(3.74%)	12(5.61%)
	Market favourable situation		11(5.14%)	04(1.87%)
	Urgency on the part of seller/buyer		23(10.75%)	11(5.14%)
	Long marketing time advantage		11(5.14%)	23(10.75%)
	Inaccurate rental appraisal by the agent		15(7.00%)	18(8.41%)
	Absolute dictate by the seller/buyer		38(17.76%)	19(8.87%)
	Ambitious overpricing/under budgeting by the seller/buyer		108(50.47%)	127(59.35%)

^aThis Table has two parts: First part is for the rental transaction while the second part is for the sales transaction. Each part reflects the responses of supply and demand sides to the transaction characteristics and causes of variation in the anticipated and eventual prices (rental and sales) of the listed properties.

Source: Author's field survey (2020)

the buyers perspective respectively while TOM of the rental transaction shows 38 days and 43 days for the landlord and tenants respectively. This indicates that sellers stay 29 days in the sales market longer than the buyers, while tenants stay five days longer in the rental transaction than the landlords. This may be the evidence of residential property dynamism and reflection of market condition as at this study period.

Table 2. Descriptive statistics of sales and rental transactions.

OUTCOME	SALES TRANSACTION			RENTAL TRANSACTION		
	Sellers	Buyers	Variation	Landlords	Tenants	Variation
Time on the Market (TOM)	160 days	131 days	29 days	38 days	43 days	5 days
Asking/budgeted prices to the actual price (Ratio)	0.870	1.030	0.16	0.970	0.966	0.4%
Above asking/budget	5(2.34%)	151(70.56%)	68.22%	3(3.19%)	12(12.76%)	9.57%
Exact asking/budget	16(7.48%)	36(16.82%)	9.34%	61(64.90%)	41(43.62%)	21.28%
Below asking/budget	193(90.18%)	27(12.62%)	77.56%	30(31.91%)	41(43.62%)	11.71%
Total number of transactions	214	214		94	94	

Source: Authors field work (2020)

This observed TOM for sellers and buyers in this study is at slight variance with the initial findings of 31 days (135 days for sellers and 104 days for buyers) in the UK by Devaney and Scofield (2015) and Hayunga and Pace (2016) of 196 days documented at the US; these are evidence from developed economies which may not fit into the developing property market due to the obvious variations and characteristics.

In Nigeria, Olaleye et al. (2015) found 146 days at sellers' perspective only and Agboola and Scofield (2018) found 306 days. The variation of 14 days (160–146 days) TOM between this study and Olaleye et al. (2015) was explained by the variation in the study coverage. While this study spreads on eight urban centres of Nigeria, Olaleye et al. (2015) were limited to one vibrant urban property market in Nigeria and that is Lagos. Wide variation of 146 days between this study and Agboola and Scofield (2018) was explained by the extended period beyond the TOM (132 days post-transaction process for title transfer perfection); this is an expected variation.

As regards this study, the long-stay by the sellers may be as a result of multiple discussions with more buyers on a given transaction pursuit while long-stay of the tenant may be as a result of multiple visitations of a variety of alternative rental properties (this may not be obtainable in the developed nations property markets). In addition, lower budget rent as compared to the asking rent may cause a prolonged stay in the market by the tenants and a high asking price may let the sellers stay longer in the property market except by luck. In summary, longer TOM before selling or letting property may be attributed to the condition of the market, which reflects the sellers' over-ambitious in pricing or tenant under budgeting of rent or inaccurate appraisal by their agents.

As indicated in Table 2, the actual price of the property achieved 87% of the asking price at the seller's perspective and 103% of the budgeted price at the buyer's perspective which is neither at the advantage of the buyer nor the seller on a general note in the sales transaction. In specific term, however this interprets that sellers achieved 13% less of their price expectation while buyers pay 3% more than their purchase price expectation, indicating that buyers' expectation is closer to budget price than sellers' expectation from the asking price. This achievement of 87% of the actual price by asking price shows that asking price is the likely determinant of achieved prices, not TOMs. This is in line with Olaleye et al. (2015)'s finding that asking prices of the residential property market could be used to predict their sales prices and that offering about 84% of asking price as the sales price in the market (which amounted to 12.58% off the asking price) would seem to be a reasonable offer.

In addition, 90.18% of the transacted properties were sold below the asking price, 7.48% sold at the exact asking price while 2.34% was sold above the asking price. For transaction purchase, 70.56% of residential properties were bought above their budgeted sum, 16.82% bought at their exact budgeted sum while 12.62% of the properties were bought at the price that was below their budgeted sum.

Ideally, the asking price/rent should be equal to the actual realized price/rent to indicate that asking prices matter. However, since asking price is said not to be an indication of the actual price (Han & Strange, 2016), a mismatch is anticipated. When a mismatch occurs as evidenced in this study, a situation of overpricing or underpricing deemed to have occurred necessitating the seller/landlord selling or letting below or above their asking price/rent or buyer/tenant buying/renting below or above their budgeted price/rent.

This situation can be linked to the problem of secrecy/non-complete disclosure of actual limits by the transaction parties to their agents. This is still evidence of the immaturity of the Nigerian property market and the implication of this is the likelihood of sending in a wrong signal that can create a bottleneck in property liquidity (i.e. The ability to convert property to cash with an ease) to the stakeholders as corroborated by Agboola and Scofield (2018).

The finding of 13% variation in sale transaction in Table 2 is contrary to what is obtained in the literature which presented the range of 3–6% as the acceptable and reasonable margin between the asking price and the achieved price in the developed economy (Olaleye et al., 2015). While the 4% in the study of Merlo and Ortalo-Magne (2004) in the UK and Han and Strange (2014) in the US fall within the acceptable margin, 27% documented by Carrillo and Shiller (2013) is at wide variance with this study, but at marginal variance with 16% documented by Olaleye et al. (2015) in Lagos, Nigeria.

Surprisingly, unlike the asking price that has a negative variation of 13% in Table 2, actual rent achieved by the tenants was 103% of the budgeted rent, implying a positive variation of 3%. This is a clear indication of overpricing (selling below the asking price by the sellers) and under budgeting (buying below the budgeted price by the buyers). This under budgeting by the buyers corroborates 4% and 14% actual price above the asking price (budgeted price) in the studies of Han and Strange (2014) in the US and Merlo and Ortalo-Magne (2004) in the UK respectively. There was also a noted intra parties' variation of 16% between parties for sale transaction. The finding of 2.34% and 12.62% actual price above the asking/budgeted prices on the sellers and buyers sides, is at variance with the studies of Case and Shiller (2003) of 27.9% in 1988 and 48.4% in 2003, and 34% documented by Velma et al. (2019) in the US.

In the rental market, actual rent achieved 97% as the asking rent from the landlord's perspective and 96.6% from the tenant's perspective indicating a slight variation of 0.4%. In 31.91% of the property rental transaction, actual rent was below the asking rent, 64.90% was the exact asking rent while 3.19% was above the asking rent. On the tenant's side, 43.62% of the rental transaction was below and 43.62% was exactly equal to the budgeted rent by the tenants while 12.76% of the transaction indicated the rent payment above the budgeted rent. This indicates a slight intra parties variation of 0.4% between the landlords and tenants (justifying the extent and width of variation in the rental to that of a sales transaction of 16%).

In conformity with Allen *et al.*, (2009) and Stull (1978), issue of overpricing of rent noted in this study will lead to a longer TOM with an implication of long vacancy and creation of rental void that will impact negatively on the rental income on the property for the landlords. This may also attract longer stay in the market for tenants due to under-budgeting of rent. Although, both variations of 3% and 3.4% fall within the stipulated range of 3–6% for sales transactions in the literature of a developed economy, however, the acceptable range for asking and actual rent has not been previously documented for comparison due to the studies on property transactions that skewed towards sale transaction and non-availability of similar studies on rental prices. This deprived the comparison of this study findings with any other.

Inferential statistics

A Pearson correlation matrix was used to determine the relationship existing among the adopted variables: asking price, budgeted price, actual price, and TOM on one side and asking rent, budgeted rent, actual rent, and TOM on the other side. The results in Table 3 show a positive relationship among all the considered variables on both sides. The actual price has a strong positive relationship with the asking price (0.999) and actual rent has a perfect relationship with the asking rent (1.000). Also asking price and budgeted price exhibit a strong positive relationship (0.998). However, the relationship between prices and TOM and rents and TOM is very weak. For instance, as reflected in Table 3, the actual price to TOM to sell is 0.138 and the actual rent to TOM to let is 0.090.

This finding by cross-referencing, confirms the small variation recorded in the descriptive statistics, suggesting further that the asking price/rent is near perfect estimate of the market price/rent, not the TOM. This finding is contrary to the study of Orr *et al.* (2003) that found no evidence of a direct relationship between TOM, asking rent, actual rent; though on commercial property in Scotland.

Regression analysis is presented in Tables 4 and V as model summaries and regression coefficients. Table 4 presents the coefficient of determination (R^2) which provided the level of explanation of the model as 0.999 for price and 1.000 for the rent suggesting that the asking price and TOM explained 99.9% of the variation in the achieved price while only 0.1% were accounted for by other undisclosed variables; perhaps marginal error. For rentals, the asking rent and TOM are the main variables that explained all the variations

Table 3. Correlation coefficients of sales and rental transactions.

	ACTUAL PRICE	ASKING PRICE	BUDGETED PRICE	TOM-SELL	TOM-BUY
ACTUAL PRICE	1.000	0.999	0.999	0.138	0.184
ASKING PRICE		1.000	0.998	0.145	0.189
BUDGETED PRICE			1.000	0.141	0.178
TOM-SELL				1.000	0.119
TOM-BUY					1.000
	ACTUAL RENT	ASKING RENT	BUDGETED RENT	TOM-LET	TOM-RENT
ACTUAL RENT	1.000	1.000	0.999	0.090	0.210
ASKING RENT		1.000	0.999	0.096	0.210
BUDGETED RENT			1.000	0.094	0.188
TOM-LET				1.000	0.028
TOM-RENT					1.000

Source: Authors field work (2020)

Table 4. Sales and rental market model summaries.

Models	R	R ²	Adjusted R ²	Standard error of estimate
Sales	1.000	0.999	0.999	7.368
Rental	1.000	1.000	1.000	1.145

Source: Authors fieldwork (2020)

in the achieved rent. This therefore, indicates that asking price/rent and TOM are adequate enough to determine the actual price/rent of the residential property. In addition, the asking price is the predictor of TOM at the seller's/landlord's agent point of view while the budgeted amount is the predictor of TOM from the buyer's/tenant's agent point of view.

Beta coefficients were adopted to measure the sensitivity of the variables to the actual price and rent. Table 5 presents the standardized coefficients, where all the variables are significant at a 95% level except the TOM of buyers (0.674) and TOM of tenants (0.102). By virtue of its standardized Beta coefficient of 0.696 asking price impact more on the actual price than the budgeted price (0.305) and the TOMs (−0.007 for seller and 0.000 for buyer) on sales transaction perspective. From a rental transaction perspective, asking rent impacts more on the actual rent (0.888) than the budgeted rent (0.112) and the TOMs (−0.005 for landlord and 0.003 for the tenant).

Model of the interaction of the variables with the actual price and rent are presented as multiple regression equation sourced from the variable coefficients and applied to both the achieved rent and the achieved price as follows:

$$AP = 2.102 + 0.696ASP + 0.305BDP - 0.007TOMSELL + 0.000TOMBUY \quad (3)$$

$$AR = -9428.02 + 0.888ASR + 0.112 BDR - 0.005TOMLET + 0.003TOMRENT \quad (4)$$

Model 3 presents the result for sales transaction which indicate that at t value of 19.891, and p 0.000, the asking price has greater influence than the budgeted price at 8.723 (p.000) and TOMs of the seller at −3.354 (p.0.000) and TOM of the buyer at −0.421 (p.0.674). For the rental market, asking rent at 22.393 (p.000) has a greater impact than other variables such as budgeted rent at 2.826 (p.0.006), TOM of the landlord at −3.211 (p 0.002), and TOM of the tenant at 1.652 (p.0.102). This finding implied that in residential property transaction cross-referencing, asking rent impacts more than the asking price in pricing/rental actual performance. While TOM of sellers and that of landlords are significant but contribute little to the actual price and rent of residential property, TOM of buyers and TOM of renters are insignificant.

By intra parties referencing, it shows that asking price impacts more on the actual price than the budgeted price and TOMs and asking rent impacts more on the actual rent than the budgeted rent and TOMs. On cross transaction referencing, asking rent impacts more than the asking price in actual performance. Although, asking prices are near estimates of the actual prices; both sale and rental transactions are in favour of the demand side. However, asking rent is not as negotiable as the asking price in Nigeria residential property transactions because it is an already established price while asking sale price is an estimate subject to buyers' acceptance or adjustments by the power and degree of the bargain.

Table 5. Coefficients of the models.

Price model	Unstandardized coefficients			Standardized coefficients			Unstandardized coefficients			Standardized coefficients		
	B	Std.Error	t	Beta	Sig.	Rent model	B	Std.Error	t	Beta	Sig.	
Constant	2.102	2.170	0.969		0.334	Constant	-9428.02	31,897.002	-0.296		0.768	
Asking price	0.668	0.034	19.891	0.696	0.000	Asking rent	0.887	0.040	22.393	0.888	0.000	
Budgeted price	0.312	0.036	8.723	0.305	0.000	Budgeted rent	0.115	0.041	2.826	0.112	0.006	
TOM-sell	-34,273.27	10,219.574	-3.354	-0.007	0.001	TOM Let	-1712.77	533.471	-3.211	-0.005	0.002	
TOM-Buy	-5042.92	11,984.940	-0.421	0.000	0.674	TOM Rent	918.599	556.043	1.652	0.003	0.102	

Source: Author's field survey (2020)

This indicates that asking rent is closer to final letting rent while asking sale price of a property is subject to more negotiations towards downward review during the transaction bargaining. There is a saying that purchasing a property is the actual way to “getting onto the housing ladder” not renting, implying that the price is a more crucial factor in stepping up the rungs of the ladder.

Conclusion

The study provided an empirical framework that isolates the supply and demand perspectives in the sale and rental transactions of residential property with a view to providing in-depth knowledge that can reduce the information shield and asymmetry nature of property transaction information. This was achieved by adopting a three-stage classical panel longitudinal design on transaction data through the effective generation of property transaction feedback among the Nigerian professional estate agents.

The study found asking prices as the main determinants of achieved prices, not TOMs, and that sellers stay longer in the market than buyers while tenants stay longer in the market than the landlords. Sales transaction advantage is mainly in favour of the buyers, but rental transaction slightly favours the tenants. Duration of stay in the market by sellers and landlords (representing the supply side) is significant but that of buyers and tenants (representing the demand side) is not.

Furthermore, supply side exhibits evidence of overpricing while demand side exhibits under-budgeting. Asking rent is not as negotiable as the asking price in Nigeria residential property transactions. The identified lack of accessible feedback on concluded transactions among professional agents in Nigeria has been observed as the transaction veil indicating its immaturity, and obviously hindering the accessibility of most property transaction participants, especially the ones who are not parties to such transactions.

Centralized data on concluded transactions will therefore be an indication of openness in Nigeria property transactions with the positive effect of subsequent attraction of international professionals to participate in Nigeria property market transactions. Although NIESV has made an effort at creating a database for property transactions in Nigeria, this is seen to be halfway in its present form, as it was limited to the asking prices without a corresponding and complementing feedback from asking prices making it have limited use.

The study therefore suggested that as a way of improving on a property database of the country, there is a need to follow up on the listed properties to the completion of the transaction towards making the actual prices open just like the asking prices. Further, the professional codes of conduct expressly provided that a professional property agent is not expected to act for both parties simultaneously in the same transaction, he is either to act for supply or the demand side. Results of this study present differing characteristics for each party to the transactions, the peculiarity of this variation needs to be understood by professional agents for them to have specific applications to guide against a wrong prescription. Therefore balance information in an ideal property market should incorporate information coming from supply and demand sides simultaneously as attempted by this study. This will serve as an impetus for further research in this aspect.

This study demonstrated the matching of asking prices with the actual prices at the perspectives of the main market players covering both sale and rental transactions.

Although this is a Herculean task, that has become the reason for procrastination in the efforts to create a complete property transaction database in Nigeria. NIESV as a professional body in charge of property matters in Nigeria should therefore improve on this research effort by ensuring the creation of up-to-date centralized and expanded repository. Such that will include the assemblage of data on the actual transaction and coordination of its accessibility for effective dissemination of complete transaction information to all the property market participants in conformity with the submission of RICS (1994).

This study is limited to residential property and does not include transactions that were concluded without listing. In addition, no clear separation was noted between the sales and rental market and the TOM is not inclusive of any duration that might have taken before both parties hook up with the listing platform. This could be another area requiring research attention. HT Nevertheless, the study will prevent wrong signalling in property transaction prescriptions, reduce the asymmetrical property transaction information among stakeholders and generate the required indices and metrics on residential property transactions for decision making. It will also ensure near accurate valuation exercise by the professionals and create hitherto lost confidence in the professionals by their clients. Furthermore, it will bridge the wide gap between transaction expectation and actualization for explicit property transaction prescriptions, attracts foreign participants to the Nigerian property market, and consequently enhances the contribution of the property market to the Nigerian economic growth. This study is the first in Nigeria that links the asking prices of property from the start to the conclusion having the involvement of both parties in property transactions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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