



Influence of Transaction Costs on Unsold New Houses Held by Members of Kenya Property Developers Association in Nairobi County

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Article History

Received: 2023-05-29

Revised: 2023-06-05

Accepted: 2023-09-02

Published: 2023-09-04

Keywords

Association

Kenya Property Developers

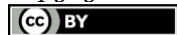
Real estate inventory

Transaction costs

How to cite:

Ngeera, K, F. K. (2023). Influence of Transaction Costs on Unsold New Houses Held by Members of Kenya Property Developers Association in Nairobi County. *Research Journal of Business and Finance*, 2(2), 13-25.

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Abstract

Despite the housing shortage in Kenya, property developers continue to record high numbers of unsold new houses thus tying up funds which jeopardizes the capacity of property developers to engage in constructing more new houses to meet the ever-increasing demand. The purpose of this study was to determine the influence of transaction costs on unsold new houses held by members of the Kenya Property Developers Association (KPDA). The study adopted a positivist philosophy and descriptive correlational research design. The study population consisted of 4,085 unsold new houses. A sample size of 364 units was drawn using a multistage random sampling technique. Property managers of the members of KPDA were the unit of observation and data was collected through a self-administered questionnaire. Data analysis was done through descriptive statistics which comprised of relative frequency distributions, means, and standard deviation. Inferential statistics used included ordinal logistic regression and one-way analysis of variance. The study findings from the generalized ordinal logistic regression revealed that transaction costs of the unsold new houses explained 18.7% of the duration they remained unsold ($r^2 = 0.187$). Moreover, the results indicated that registration fees ($\beta = 0.398$, $p < 0.05$), real estate agent commissions ($\beta = 0.568$, $p < 0.05$), and legal fees ($\beta = 0.306$, $p < 0.05$) had a significant influence on the duration that new houses remained unsold. The study concluded that transaction costs of the unsold new houses impact the duration the houses remained unsold. The study recommends that residential property developers should consider reducing the transaction costs of the unsold house to below 5% of the quoted price.

Introduction

Unsold new housing stock (UNHS) is completed houses offered for sale but remain unbought, thus representing a real estate inventory to the developer (Jang et al., 2010). The economic explanation for UNHS lies in excess supply in comparison to the demand for houses in the market (Lee, Lee, & Kim, 2017), and is thus an important indicator of the performance of the housing market system as it sends signals about the market trends to participants of the housing market (Lee et al., 2017). Moreover, the housing market relates to a country's aggregate economy (Walteros et al., 2018) and is, therefore, a predictor of economic performance (Schneider, 2020). Housing over-supply causes a decline in the existing housing prices and the expected return on investment. This also causes a decline



in motivation for asset investment and the interest in purchasing a house, decreasing housing demand and increasing the unsold new housing stock (Kwoun et al., 2013). On the other hand, a decrease in housing supply results in an increase in new housing prices, motivation for asset investment and interest to purchase a house, resulting in a decrease in the UNHS (Kwoun et al., 2013). When housing income decreases, the ability to repay a mortgage decreases, reducing the interest to purchase a house. This decreases housing demand, increasing UNHS (Lee et al., 2017). The relationship between UNHS, investment decisions and housing supply-demand is dynamic and rotated as they are intertwined and affect one another in the housing market (Schneider, 2020). UNHS is a challenge globally, and in 2018, developers in Italy had an estimated UNHS of 100,000 units despite the reports that the market could not supply the potential demand from young people and immigrants (PWC, 2019). The Canadian market remains broadly oversupplied with a rising number of UNHS despite studies by academic and industry researchers estimating the need for 4.6 million additional housing units by 2030 (PWC, 2016).

In Malaysia, 1864 residential units remained unsold in Klang Valley, 1861 in Kuala Lumpur and 675 in Selangor (JLL, 2019). In South Korea, the number of unsold houses has increased since the 1990s, and the central and local governments started developing plans and policies to resolve the problem in 2010 because the unsold houses have negative effects on the value of nearby properties and their local communities (Lee et al., 2017). As of October 2019, there were 60.63 million housing units in Japan, of which 8.46 million were vacant, which accounts for 13.9% of the total housing stock in the country, with higher rates in regions with less population in Japan (Tomoko & Yui, 2020). In Germany and Malaysia, UNHS has been associated with the location, size and characteristics of the house and the spatial dimension of the neighbourhood (Belke & Keil, 2018). Despite the housing shortage in Kenya, property developers continue to record high numbers of unsold new houses in their portfolios even with government investment, subsidies, and policies in affordable housing (KPDA, 2019). The Kenya Property Developer's Association (KPDA) indicated that in 2021, there were 4085 Unsold New Houses in Nairobi County and its Metropolis (KPDA, 2021). Further, Cytonn (2021) indicated that some of the UNHS remain unsold for over a year, thus tying up funds for housing developers and jeopardising their capacity to develop more new houses to meet the ever-increasing demand. The factors contributing to UNHS have been studied, but most studies focus on the demand side factors. Hence, there is a dearth of studies on the supply-side factors (Li & Wei, 2020). One key factor that has been indicated to influence UNHS is transaction costs. Transaction costs related to legal fees, taxes, and real estate commissions are vital in influencing demand for housing and thus indirectly influencing UNHS (Ceritoğlu, 2020). This study seeks to investigate the influence of transaction costs on unsold new houses held by members of KPDA in Kenya.

Kenya has an annual demand of 250,000 residential housing units with an estimated supply of 50,000 units, causing a deficit of 2 million units (CAHF, 2021). The country has an urbanisation rate of 28%, with 46.5% living in slums. With a population growth rate of 2.8% over the past two decades, the deficit is bound to increase if effective interventions are not implemented (World Bank, 2021). The disequilibrium in the supply and demand for housing is mostly due to economic reasons and unaffordability (Cytonn, 2021). Despite the housing shortage in Kenya, property developers continue to record high numbers of unsold new houses in their portfolios, even with government investment, subsidies, and policies in affordable housing (KPDA, 2019). According to the KPDA (2021), there were 4085 unsold new houses in Nairobi County and its metropolis in the year 2021.

Moreover, according to Cytonn (2021), certain units of the UNHS experience a prolonged period of being unsold, resulting in the immobilisation of funds for housing developers. Consequently, this



situation poses a threat to their ability to undertake the construction of additional new houses to cater to the continuously growing demand. Factors contributing to UNHS on the demand side have been significantly studied. Ceritoğlu (2020) studied permanent income elasticity, price elasticity, and interest rate elasticity of housing demand. Wang, Hui, and Sun (2018) studied population ageing and real estate price on housing demand, while Strobel, Nguyen and Lee (2020) studied the effects of macroeconomic uncertainty on housing demand. Recommendations from these studies have been implemented in some countries to improve the housing demand. Baqaee and Farhi (2020) recommended that reducing the unemployment rate will significantly increase housing demand, which has been implemented in countries. The housing supply side has been grossly understudied, with most studies focusing on the housing demand side. Therefore, this study sought to bring out a new dimension in the housing market by reviewing the supply-side considerations of transaction costs to contribute immensely to the housing supply side. Moreover, limited studies have been carried out in Kenya to address the unsold new houses in the context of housing developers. This study aimed to determine the influence of transaction costs on unsold new houses held by members of the Kenya Property Developers Association.

Literature Review

This section discusses the theoretical framework adopted in the study. It provides a conceptual framework that explains how the variables relate and are operationalised. An empirical literature review is provided on the influence of transaction costs on UNHS.

Theoretical Review

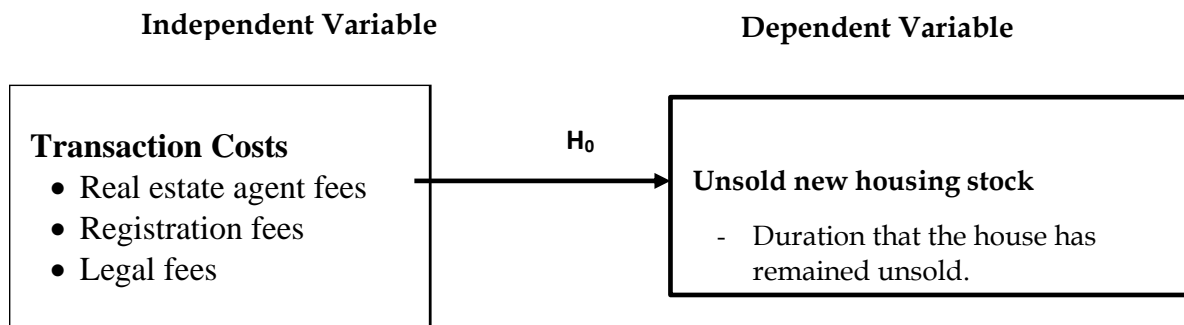
Transaction cost theory was first developed in the 1930s by Ronald Coase where the main premise was that market transactions entail a set of costs, which can be reduced if transactions take place within a firm (Benkler, 2017; Rindfleisch, 2020; Williamson, 2010). However, Coase 50 years later noted that whether a transaction would be organised within the firm or whether it would be carried out on the market by independent contractors depended on a comparison of costs of carrying out the transaction within the organisations and the costs of carrying out the transaction by the independent contractors (Rindfleisch, 2020). Coase established the existence of the transaction costs. At the same time, Oliver Williamson (1979) further developed the theory by identifying the attributes of both the actors and transactions to help explain why and when they occur (Abdel-Galil et al., 2020). This theory suggests that conducting transactions is a costly endeavour and different modes of organizing (Williamson, 2010). The main postulate of transaction cost economics is that besides the cost of production, other additional costs result from transactions between parties (Qian et al., 2013). Transaction costs differ from production costs; production costs transform inputs into outputs, whereas transaction costs arise from economic exchange (Abdel-Galil et al., 2020). Transaction costs are classified into pre-contract transaction costs and post-contract transaction costs. Pre-contract transaction costs are incurred before a transaction occurs, such as costs incurred in feasibility studies, drafting, and negotiating agreements. At the same time, post-contract transaction costs occur after the contract has been signed (Abdel-Galil et al., 2020). The theory was applied in this study to explain how transaction costs such as sales commissions, legal fees and applicable taxes affect the real estate inventories held by the property developers.

Conceptual Framework

Figure 1 illustrates the conceptual framework used to guide the research and hypothesises a direct linear relationship between transaction costs and unsold new housing stock by members of KPDA.



Figure 1: Conceptual Framework



Deng and Zhang (2020) states that transactions generate transaction costs in the market, a good transaction system will reduce the transaction costs of both the suppliers and demanders in the market. The transaction costs incurred in the transaction process include the cost of information searching, contracting signing, and effective supervision and transaction notarisation. More transaction times and stronger transaction frequency will lead to higher transaction costs for the suppliers and the demanders (Deng & Zhang, 2020). In Housing, the transaction costs incurred in the transaction process include the cost of information searching, contract signing and effective supervision and transaction notarisation. Transaction costs are all costs other than the production cost and are borne by different key stakeholder groups in each decision-making stage. Some housing transaction costs are difficult to quantify (Agboola, 2015). Property developers incur some costs when selling houses, such as i) registration costs, which are the fees and taxes, incurred when registering the property with the competent land registration. ii) Real estate agent fees are paid to the agents who act as intermediaries in a property purchase, matching buyers with sellers and acting as intermediaries in price negotiations. iii) Legal fees are paid to lawyers or the conveyancer in preparing sales and purchase agreements, and the lawyers ensure no liens on the property (Lai & Tang, 2016). This study operationalised transaction costs using real estate agents’ fees, and legal and registration fees. The dependent variable was UNHS, which houses a sales contract not entered after marketing began attracting buyers (Kwoun et al., 2013). This was measured using the duration of time that the house remained unsold from the time it was put up for sale. Based on this conceptual framework, the following null hypothesis was tested:

H₀: Transaction costs have no significant influence on unsold new houses held by Kenya Property Developers Association members.

Empirical Review

The transaction costs include different types of costs and fees, such as transfer taxes (such as stamp duties), registration fees incurred when registering the property in the land registry, notarial or other legal fees and typical real estate agency fees. Most of these costs tend to fall on the buyer (Caldera Sánchez & Andrews, 2011). One transaction cost is real estate agent fees, which are paid to the real estate agents who act as intermediaries in a property purchase, matching buyers with sellers and acting as intermediaries in price negotiations (Gautier et al., 2017). A study on real estate agent commission structure and sales performance by (Gautier et al., 2017) used a nationwide set of residential real estate transactions in the Netherlands from 1985 to 2011. The study determined that houses sold through a flat-fee broker obtain a 2.7 per cent higher price and sell significantly faster.



Rutherford and Yavas (2012) conducted a study on the impact of discount brokerage in residential real estate markets and found that houses listed by discount brokers sell at similar prices to the non-discount brokerage listings and are less likely to sell and take longer to sell; hence, increasing the real estate inventories. Moreover, Barwick et al. (2015) studied the conflicts of interest and the realtor commission puzzle using a dataset on realtor commissions for 653,475 residential listings in eastern Massachusetts from 1998-2011. The study found that properties with lower commission rates experience less favourable transaction outcomes: they are 5% less likely to sell and take 12% longer. Tan (2013) studied the housing needs and aspirations of the Malaysian housing market and identified the challenges facing the housing industry on the supply side, including increased housing acquisition costs such as legal fees that have led to a drop-in demand for housing units. Similarly, (Hedlund, 2016) determined that there is prolonged time on the housing market due to high legal costs and low returns to pursuing borrowers after foreclosure. A study analysing residential mobility patterns across OECD countries showed that notarial and legal fees have a negative and significant effect on the mobility of the residential houses (Caldera Sánchez & Andrews, 2011). This evidence is in line with the findings of Van and Van (2005) for the Netherlands, which suggest that legal costs restrict residential mobility. The study collected data from 400 respondents and established that side costs in the home-buying process, such as legal fees, negatively influenced the time the houses remained unsold. Moreover, Merlo et al. (2015) studied the home selling problem using data on transaction histories for 780 residential properties in England. They found that the buyer pays for all other fixed selling expenses associated with the final transaction, including the legal fees and taxes, which explains why houses remain unsold for long periods.

Methodology

This section highlights the research methodology applied in the study. The research philosophy and design, study population, sampling frame and design, data collection tools and methods, research procedures and data analysis method used in the study.

Research Philosophy and Design

This research adopted a positivist approach. According to Cooper and Schindler (2022), positivism rests on measurable observations that lend themselves to statistical analysis. Positivism applies where the observer is independent, external, and objective of what is being researched (Békés & Kézdi, 2021). Positivism was chosen for this study because the study was scientific by attempting to establish how transaction costs influence real estate inventories. A descriptive correlational research design was adopted in this study. The design was deemed suitable because the focus of the study was to determine the extent to which transaction costs influence real estate inventories. This design was hence suited to this study since all these variables were pre-existing, and the study's purpose was to determine how they were related.

Target Population and Sampling Technique

The target population was the property developers of the 4085 unsold new houses under high-rise flat developments in Nairobi County held by residential property developers who were members of KPDA. The target population was computed from a preliminary survey of the developers' websites and Delphi interviews with representatives of KPDA. The unsold new houses were the units of analysis, whereas the managers of the housing development firms were the units of observation. This study applied a multi-stage probability sampling technique because of the geographical spread of the samples to ensure proper representation of a sample. Census was applied at the first stage. A census includes the entire population in a study, and it was convenient when the total population was less



than 100 property developers. The second stage was stratified random sampling, where the target population was divided into discrete groups before sampling (Saunders et al., 2019). The Unsold new high-rise flats houses were stratified per region as stipulated by the Department of City Planning, Nairobi City Council 2019 guidelines (City Council of Nairobi, 2019). The sample was proportionally allocated to each cluster. Finally, simple random sampling was used to select the sample size of 364 units from each population cluster.

Data Collection and Data Analysis Methods

The study applied a structured questionnaire pretested for reliability and validity to gather primary data. The drop-and-pick-later method was applied to administer the questionnaire. The data was analysed using descriptive statistics such as percentages, frequencies, means, and standard deviations. At the same time, ordinal logistic regression was utilised to examine the influence of transaction costs on the UNHS. The study used a statistical package for social sciences (SPSS) to analyse the data.

Results

The study aimed to gather data from a sample of 364 unsold new houses under high-rise flat developments in Nairobi County held by residential property developers who were members of KPDA. The study received responses regarding 328 Unsold New Houses, representing a response rate of 90.1 per cent. The study results indicated that 41.4% of the respondents were lower-level managers, 34.8% were middle-level managers, and 23.8% were senior managers. Regarding work experience, the results showed that 43% had worked in their companies for a period between 6 and 10 years, while only 0.9% had served in their companies for over 20 years. The results further showed that 42.7% had worked in the real estate sector for a period between 6 and 10 years, while only 7.6% had worked in the real estate sector for a period between 1 and 5 years.

Descriptive Statistics for Unsold New Houses

The dependent variable in this research was the unsold new houses. The aspects investigated for the unsold new houses included the nature of development, the current percentage of occupancy, and the months that the house has remained unsold. The study investigated the nature of development and whether the unsold new house was in a purely exclusive one-bedroom, exclusive two-bedroom, exclusive three-bedroom, exclusive four-bedroom, or mixed development. The results are summarised in Table 1.

Table 1: Nature of the Property Development

Nature of development	Frequency	Percent
Exclusive 1 bedroom	22	6.7
Exclusive 2 bedroom	49	14.9
Exclusive 3 bedroom	127	38.8
Exclusive 4 bedroom	48	14.6
Mixed development (1, 2, 3, 4 and more bedrooms)	82	25.0
Total	328	100.0

The findings provided in Table 1 show that 38.8% of the unsold new houses were in an exclusive 3-bedroom development. Besides, only 6.7% of the unsold new houses were in an exclusive 1-bedroom development. The study further investigated the likelihood of the house to remain unsold when it was in a mixed development. The results are presented in Table 2.

*Table 2: House Likely to Remain Unsold If Development Is Mixed*

Type of House	Frequency	Percent
1 bedroom	3	3.7
2 bedrooms	21	25.6
3 bedrooms	52	63.4
4 bedrooms	6	7.3
Total	82	100.0

The findings in Table 4.11 indicate that 63.4% of the respondents believed that three-bedroom houses were most likely to remain unsold if a house is in a mixed development. Only 3.7% indicated 1-bedroom houses as the most likely to remain unsold in a mixed development. The findings are provided in Table 3 regarding the current occupancy percentage.

Table 3: Current Percentage of Occupancy for the Development

Percentage of occupancy	Frequency	Percent
Less than 15%	19	5.8
16-30%	139	42.4
31-45%	88	26.8
46-60%	25	7.6
More than 60%	57	17.4
Total	328	100.0

The study findings in Table 3 indicate that 42.4% of developments comprised unsold new houses with 16 to 30% occupancy, while only 5.8% had less than 15% occupancy. These findings imply that of all the developments with unsold new houses, 51.8% had less than half occupancy.

The study further investigated the duration that the house had remained unsold since marketing of the house began, and the results are provided in Table 4.

Table 4: Duration That the House Has Remained Unsold

Duration	Frequency	Percent
6 months and below	81	24.7
7-12 months	78	23.8
13-18 months	106	32.3
19-24 months	15	4.6
over 24 months	48	14.6
Total	328	100.0

Table 4 provides findings, which indicate that among the unsold new houses included in the study, 32.3% had remained unsold for a period between 13 and 18 months. The findings also indicate that 4.6% of the unsold new houses had remained in that condition for 19 and 24 months. These findings indicate that 80.8% of the new houses had remained unsold for less than 18 months.



Descriptive Statistics for Transaction Costs

The descriptive statistics of transaction costs of the Unsold New Houses include percentages and frequencies developed based on the responses regarding the registration, real estate agent commissions and legal fees as a proportion of the quoted price of the unsold new house. Table 4.52 provides a summary of the results.

Table 5: Transaction Cost as Percentage of Quoted Price of Unsold New Houses

Transaction Costs	Percent	Frequency	Percent
Registration fees such as change of user fees, title searches, subdivision fees, and/ or plan approval fees	5 and below	62	18.9
	6-10	99	30.2
	11-15	104	31.7
	16-20	61	18.6
	More than 20	2	.6
	Total	328	100.0
Real estate agent commission	5 and below	37	11.3
	6-10	67	20.4
	11-15	136	41.5
	16-20	34	10.4
	More than 20	54	16.5
	Total	328	100.0
Legal Fees	5 and below	35	10.7
	6-10	55	16.8
	11-15	113	34.5
	16-20	113	34.5
	More than 20	12	3.7
	Total	328	100.0

The study findings in Table 5 show that for 31.7% of the unsold new houses, registration fees such as change of user fees, title searches, subdivision fees, and plan approval fees were between 11 and 15% of the quoted price of the unsold new house. Only 0.3% of the unsold new houses had registration fees more than 20% of the quoted price. Regarding real estate agent commissions, 41.5% of the unsold new houses had commissions of 11 to 15% of the quoted price, while 10.4% had 16 to 20% commissions. Concerning legal fees, 34.5% had legal fees of 16 - 20% of the quoted, with a similar percentage attracting legal fees of 11 - 15%. The unsold new houses that attracted more than 20% of legal fees were 3.7%.

Ordinal Logistic Regression Results

An ordinal logistic regression model was fitted to investigate the influence of transaction costs of the unsold new house on the duration that the Unsold New Houses had remained in that state. Because the dependent variable (the length of time the new home stayed unsold) was measured on an ordinal level (1 = 6 months and under, 2 = 7-12 months, 3 = 13-18 months, 4 = 19-24 months, and 5 = above 24 months), ordinal logistic regression was utilised. Before fitting the ordinal logistic regression, the researcher ran preliminary tests to assess whether the four assumptions of the ordinal logistic regression were met. According to McCoach and Cintron (2022), the dependent variable must be on



an ordinal level, there must be one or more ordinal, continuous, or categorical independent variables, there must be no multi-collinearity, and proportional odds or parallel lines must be met. All these assumptions were met, and the model was fitted.

Several generalised ordered logistic regression tests were conducted to test the hypothesis, including the model fitting information test, Pseudo R-Square, Goodness-of-fit, and the parameter estimates test. First, the results of the Pseudo R-squared for the model of location against the duration of Unsold New Houses are provided in Table 6.

Table 6: Pseudo R-Square for the Model of Transaction Costs against Duration of Unsold New Houses

Cox and Snell	.177
Nagelkerke	.187
McFadden	.066

Link function: Logit.

Table 6 indicates that the Nagelkerke Pseudo R - squared was 0.187 indicating that transaction costs of the unsold new house explained 18.7% of the duration that the house remained unsold from the time it was marketed. The fitness of the model was also tested using the Omnibus Likelihood Ratio Chi-Square test, which was also used to test the fourth null hypothesis. The findings are summarized in Table 7.

Table 7: Omnibus Test for the Model of Transaction Costs against Duration of Unsold New Houses

Likelihood Ratio Chi-Square	df	Sig.
63.974	3	.000

The study results provided in Table 7 indicate that the model was a good fit (Likelihood Ratio Chi-Square = 63.974, $p < 0.05$). This shows that at least one of the independent variables used in the model had a significant influence on the duration of the Unsold New Houses. This led to the rejection of the null hypothesis, which was:

H_0 : There is a no significant relationship between transaction costs and Unsold New Houses held by members of Kenya Property Developers Association.

This led to acceptance of the alternative hypothesis that there is a significant relationship between transaction costs and Unsold New Houses held by members of Kenya Property Developers Association. To determine the aspects of transaction costs that had a significant influence on the duration of the Unsold New Houses, parameter estimates were developed. The results are provided in Table 8.



Table 8: Parameter Estimates for Transaction Costs against Duration of Unsold New Houses

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Threshold [6 or less=1]	-3.020	.4013	-3.807	-2.234	56.638	1	.000
[7-12=2]	-1.763	.3719	-2.492	-1.034	22.462	1	.000
[13-18=3]	-.122	.3724	-.852	.608	.107	1	.744
[19-24=4]	.220	.3776	-.520	.960	.340	1	.560
Registration fees	.398	.1315	-.140	.656	9.163	1	.002
Real estate agent commission	.568	.1141	.345	.792	24.816	1	.000
Legal Fees	.306	.1072	.096	.516	8.152	1	.004

The ordinal regression models fitted from the results in Table 8 were.

$$\text{Logit P (Y} \leq 6 \text{ or less)} = -3.020 - 0.398X_1 - 0.568X_2 - 0.306X_3$$

$$\text{Logit P (Y} \leq 7-12) = -1.763 - 0.398X_1 - 0.568X_2 - 0.306X_3$$

$$\text{Logit P (Y} \leq 13-18) = -0.122 - 0.398X_1 - 0.568X_2 - 0.306X_3$$

$$\text{Logit P (Y} \leq 19-24) = 0.220 - 0.398X_1 - 0.568X_2 - 0.306X_3$$

Where Y is Duration that the house had remained unsold, X₁ is Registration fees, X₂ is Real estate agent commission, and X₃ is Legal fees.

The findings provided in Table 8 indicate that registration fees (B = 0.398, p < 0.05), real estate agent commissions (B = 0.568, p < 0.05), and legal fees (B = 0.306, p < 0.05) were significant predictors of the duration of unsold new houses. These findings show that if registration fees such as change of user fees, title searches, subdivision fees, and plan approval fees were increased by one level, the log odds of the duration of the unsold new house rising from a lower level to a higher level would increase by 0.398. At the same time, the other variables in the model are held constant. These findings imply that new houses with higher registration fees would likely remain unsold longer than those with lower fees.

The findings indicate that an increase in real estate agent commission by one level would increase the log odds of the duration of the unsold new house, rising from a lower level to a higher level by 0.568. At the same time, the other variables in the model are held constant. These findings imply that new houses with higher real estate agent commissions would likely remain unsold longer than those with lower commissions. Additionally, the findings indicate that an increase in legal fees by one level would increase the log odds of the duration of the unsold new house, rising from a lower level to a higher level by 0.306. At the same time, the other variables in the model are held constant. These



findings imply that new houses with higher legal fees were likely to remain unsold longer than those with lower legal fees.

Discussion of Results

The study sought to determine the influence of transaction costs on Unsold New Houses held members of KPDA. The findings indicated that registration fees ($B = 0.398$, $p < 0.05$) were significant predictors of the duration of unsold new houses. These findings imply that new houses with higher registration fees were likely to remain unsold for a longer duration compared to those with lower registrations fees. The results are aligned to a study by Azmi and Bujang (2021) that established registration costs in the home buying process e.g. stamp duty had a negative influence on the duration that the houses remained unsold. Likewise, Liu and Ong (2021) concluded that compliance and registration costs incurred from payment of land conversion and processing fees makes housing development more expensive, which in turn influences housing affordability and time on market. The findings indicated that legal fees ($B = 0.306$, $p < 0.05$) were significant predictors of the duration of unsold new houses. These findings imply that new houses with higher legal fees were likely to remain unsold for longer than those with lower legal fees. The findings aligned with Tan (2013), who identified the housing industry's challenges on the supply side, including increased housing acquisition costs, such as legal fees that lead to a drop in demand for housing units.

Similarly, Hedlund (2016) found a prolonged time on the housing market due to high legal costs and low returns to pursuing borrowers after foreclosure. Likewise, Azmi and Bujang (2021) established that Side costs in the home buying process, e.g., legal fees, negatively influenced the duration that the houses remained unsold. Similarly, Merlo et al. (2015) found that buyers in England pay for all fixed legal fees. Hence, houses have remained unsold for long periods since marketing began.

The findings indicated that real estate agent commissions ($B = 0.568$, $p < 0.05$) were significant predictors of the duration of unsold new houses. These findings imply that new houses with higher real estate agent commissions were likely to remain unsold for longer than those with lower real estate agent commissions. The results are aligned with Tsuchihashi and Zenny (2020), who found that lowering the agents' commission would increase the number of agents and bidders participating in the auction and the likelihood of the house being sold. Similarly, Rosenthal (2015) concluded that experienced selling agents load their high commissions on the housing selling prices, reducing the likelihood of selling the houses. The results are not aligned with Barwick et al. (2015), who found that properties listed with lower commission rates experience less favourable transaction outcomes: they are 5% less likely to sell. The results were also not aligned with the findings of Merlo et al. (2015), who studied the home selling problem using data on transaction histories for 780 residential properties in England and found that the commission rate is only 1.8% of the home's sale price. This did not affect the demand for the unsold new houses since the seller paid the entire commission to the real estate agent. The results aligned with the findings of Gautier et al. (2017), which found that houses sold through a flat-fee broker of 2.7 per cent sell significantly faster than traditional brokers. Similarly, Loertscher and Niedermayer (2018) found that property developers using the best percentage fees mechanism with fees ranging from 5.4% to 7.4% achieve 85% sales of their properties.

Generalised Ordinal logistic regression results revealed that transaction costs significantly predicted how long new houses remained unsold. The study recommends that developers should be strategic when developing their transaction costs. The transaction costs should be within a reasonable percentage of below 5% of the quoted price for the house. This study was limited to residential houses within high-rise apartments; further research should be conducted to explore other property



developments, such as commercial and residential houses in other designs, such as Bungalows, villas, and town houses. The study was limited to a cut-off period of December 2020, affected by the COVID-19 pandemic; longitudinal research should be conducted to establish whether the same findings can be duplicated across different periods.

Conclusions

Generalised ordinal logistic regression analysis indicated that the likelihood ratio Chi-square for the goodness-of-fit test of the model was a good fit (Likelihood Ratio Chi-Square = 63.974, $p < 0.05$) thereby justifying rejecting the null hypothesis. Parameter estimates established that registration fees ($B = 0.398$, $p < 0.05$), real estate agent commissions ($B = 0.568$, $p < 0.05$), and legal fees ($B = 0.306$, $p < 0.05$) were significant predictors of the duration of unsold new houses. Hence, transaction costs significantly influence Unsold New Houses in Kenya.

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