
Cost of Financing on Affordability of Housing in Nakuru East and Nakuru West Sub-counties, Nakuru County, Kenya

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Abstract: Access to affordable and decent housing remains a dream to many households, especially in developing nations. In Kenya, the housing need has been identified as one of the most agent area that needs attention. In fact, the government has put affordable housing as one of the big four agenda for the Nation. This study examined the relationship between cost of financing and affordability of housing in Nakuru East and Nakuru West Sub-Counties. Data was collected from 384 households sampled from the 11 wards in the two sub-counties. Stratified random sampling was used to ensure adequate representation of every ward in the sample. Data was collected through self-administered structured questionnaires and interviews. A pilot test was conducted prior to the actual study, incorporating reliability and validity tests. The study achieved a response rate of more than 87%. Findings from analysis revealed that cost of finance is significant determinant of affordability of housing. The study recommends that the government and other stakeholders in the housing sector should consider subsidizing cost of building materials, land, and cost of professional services, mortgage facilities as well as water and electricity. The government can partner with financial institutions as well as private investment organizations to offer more affordable housing solutions to the general public.

Keywords: Cost of Financing, Affordability of Housing, Nakuru County

1. Introduction

Housing remains an important issue both to individuals and to governments. The issue cuts across all social setups and locations. While traditionally, home development was easier, especially where land was majorly ancestral, with increased population and rural urban migration, most households now have to acquire land for home [25].

Housing affordability remains one of the most important aspects of housing, whether the house is rented or owned. To the government, affordable housing demand has led to development of policies on house allowances and subsidies, housing benefits and mortgage regulations [1]. Globally, literature indicates that housing unaffordability affects 2.6% of all households across the world and whereby owner occupation unaffordability was 1.2% and unaffordability in private renting was 7.9% [16].

UN Habitat reported that affordability of housing is a big challenge to most households, especially in developing

nations [23]. This is particularly true when the cost compromises the occupants' enjoyment of other human rights. While noting lack of a universally acceptable conceptualization of affordable housing, [15] nevertheless views affordable housing as the capacity of an individual to purchase a housing unit without restricting demands for other financial resources. This viewpoint is contextually similar to that of UN [13]. Affordable housing should cost not more than 30% of gross household income for low income households [25]. This view point relates to the affordability of housing within the context of low income households.

In Kenya, the question of affordable and decent housing is critical to the government to the point the housing has been identified as one of the big four agenda for the government [11]. While the Kenyan government has recognized the problem of housing, especially in urban areas, and has rolled out affordable housing program through the 'boma yangu' initiative, the demand for housing is projected to be way beyond what the government can supply [12]. The efforts by

the government have been supplemented by private investment organizations. However, such organizations only supply urban residents, leave alone the fact that most of the housing solutions are beyond reach for most households. It is therefore very evident that the issue of housing affordability needs to be addressed [3]. Cost of housing has been identified as one of the factors influencing housing affordability. This study intends to examine the relationship between cost of financing and housing affordability.

2. Literature Review

Cost of construction or buying a house is a key determinant of affordability of housing [25]. High interest rates lead to unaffordability of loans making the dream of owning a home a fallacy to many households [22]. High interest rates have been cited as major challenge for accessing affordable housing, especially for those relying on bank loans and home mortgage to finance their housing dreams. In most economies, average interest rates for the mortgage 30%, a rate considered a bit expensive by the market. Various components influence housing affordability, including high interest rates, and installments per month [13]. High interest rates increase the overall house prices and thus low affordability, therefore, it is recommended that reduction of the cost of housing be achieved reducing the interest rates for mortgages [2].

In Italy, Torluccio *et al.* [31] established that cost of housing is high due to high interest rates on mortgages and cost of construction materials. They observed that cost of housing has negative effect on affordability of housing. They actually study recommended for lower taxation on construction materials in order to moderate the cost of housing. Similarly, Mariadas *et al.* [18] in Klang valley, Malaysia established that construction costs impact on affordability of housing through its influence on the housing price. The average influence is about 31%.

Study by Ezennia *et al.* [5] focused on the housing affordability challenges among the low income residents in Hong Kong. The study revealed a high cost of building or cost of renting decent houses to be as high as 42% of the disposal income of the low-income residents. The study also revealed a significant influence of cost of construction materials, cost of mortgages and the cost of land on housing affordability and further recommended for revision of housing policies targeting the low income residents in order to reduce the inequality problem of housing affordability between the rich and the poor.

In Malaysia, [33] established a significant relationship between home financing and home ownership. The study further revealed a negative and relationship between the level of interest rates on home financing and the housing affordability. This implies that low interest rates on home financing loans reduce the cost of housing and thus increasing the affordability of housing in the country. In New [29] on the other hand showed no correlation between mortgage rates and affordability of housing. However, the

study revealed that there was continuous increase in the mortgage rates over the years and that the affordability of housing reduced over the years and informal settlements continued to spring up.

A study on factors affecting affordability of housing in Turkey by [5] revealed that cost of housing affects purchasing power of house among the households. The study further revealed that interest rates of mortgages and the cost of housing materials affect the cost of housing. In respect to this, high costs of housing reduced the affordability of housing since reduced number of residents in Turkey could afford housing at high costs. The study recommends that governments reduce taxation on construction materials and giving subsidy to people constructing houses for renting out to the public. Similar findings were reported by [34]. In addition, study found that mortgage loan and associated interest rates influence housing finance accessibility; high interest rates discourage interested homeowners from accessing loans and mortgages.

In a study to establish the link between cost of mortgage financing and housing accessibility levels, [13] used data collected from 96 households. The study found that the reduction of the affordability of the mortgage facilities is associated with proportionality to the affordability of the housing facilities in Rwanda. The study found that the interest rates was one of the aspects influencing affordability of the mortgage facilities; increasing interest rates on the mortgage loans becoming a challenge to mortgage accessibility aspects. Related study by [19] on housing affordability among urban households in Nairobi, Kenya found out that interest on loan, construction cost, loan-to-value ratio, land value, type of mortgage instrument, loan term, and the rate of inflation affected the affordability of houses. The study reported that higher interest rates for mortgage facilities increased the monthly repayments amounts and thus higher burden to urban dwellers. To emphasize on the findings, [21] contend that the greatest challenge to housing affordability in the country is the mortgage interest rates.

A study by [19] on housing affordability among the middle income earners in Nairobi Kenya revealed that most of the middle income earners in Nairobi were unable to afford the cost related to housing construction and mortgages rates. It was evident that homelessness was a major challenge for most city dwellers and the idea of house construction was not well formed among the young cohorts for middle income city dwellers. Land rates were considered to be too prohibitive thus discouraging home ownership. The study recommended the Kenyan government to increase the affordable housing projects for most middle income dwellers to own a decent housing. Similarly, [17] found out that mortgage fees and associated charges is arguably the most significant determinant of cost of housing. Unfortunately, increasing mortgage interest rates and mortgage prices make it difficult for low-income earners to afford mortgage facilities and hence to own houses.

There is a statistically significant negative correlation

between mortgage cost and access to mortgage [14]. This implies that an increase in the mortgage cost resulted in decreasing mortgage accessibility and reduced housing affordability levels. Similar findings were reported by [25] in a study examining the influence of alternative construction technologies in achieving affordable housing in Nairobi in Kenya notes that reduction of construction costs leads to affordability of housing. The study showed that high construction costs of housing are a major challenge to affordable housing through ease of access to reasonable standards of sanitation. The study also indicated that adoption of alternative building materials and technologies is key to enabling lower construction costs and hence affordability of housing. The study had used mixed methodology to achieve its objectives.

3. Methodology

This study adopted positivism philosophy, with conclusions based on findings obtained from analysis of primary data [18]. Positivism approach combines deductive logic and empirical observations to discover and predict general patterns in practical life, thus confirming empirical

literature [28]. The study adopted ex post facto and correlational research design. Ex post facto research examines the research phenomenon without any manipulation of the research variables like in an experiment [16] Correlational design on the other hand measures and describes the nature and degree of association between variables [22]. The research design was useful in this study in examining the relationship between cost of financing and affordability of housing.

The study targeted 392,587 households from the lower income areas of Nakuru East and Nakuru West Sub-counties. The study identified head of households as the target respondents for purposes of data collection. In addition, the study targeted credit officials from mortgage financial institutions, housing cooperative societies and real estate developers and agents operating in Nakuru County. Both household heads and stakeholders were involved in the study to enhance comprehensiveness and credibility of research data. To ensure adequate representation of the population in the sample, the study adopted stratified random sampling. Distribution of the population and sample per ward was as presented in table 1 below.

Table 1. Distribution of Population and Sample by Ward.

Sub County	Wards	Population	Sample
Nakuru Town West	Barut	9,350	9
	London	27,037	26
	Kaptembwa	95,811	94
	Kapkures	12,099	12
	Rhonda	33,381	33
	Shaabab	20,983	21
	Biashara	35,269	34
Nakuru Town East	Kivumbini	27,993	27
	Flamingo	42,628	42
	Menengai	41,813	41
	Nakuru East	46,224	45

Source: Kenya National Bureau of Statistics.

The sample elements were then selected systematic sampling to ensure equal likelihood of sample elements in the sample. The households were ranked based streets and house numbers to facilitate systematic sampling. Research data was collected through questionnaires that were self-administered by the researcher. Prior to the study, a pilot test was conducted the same sub-counties. The households that participated in the pilot test were excluded from the study. The data questionnaires were tested for reliability through computation of Cronbach alpha. A value of 0.784 was obtained showing that the instruments were reliable.

Prior to data collection, the researcher sought for approval from the National Commission for Science, Technology and Innovation. The study ensured all ethical and integrity considerations are adhered to during the study. The sought relationship was determined through regression analysis. The study achieved a response rate of 87.3% which was adequate for analysis. Prior to inferential analysis, diagnostic tests;

normality (giving $p > 0.05$), multi-collinearity (giving VIF between 0.5 and 1) and autocorrelation (giving Durbin-Watson statistic value of 2, between 1.5 and 2.5) and heteroscedasticity (giving $p > 0.05$), were conducted all satisfying the conditions for analysis.

4. Findings and Discussion

This study was intended to determine the relationship between cost of financing and affordability of housing, the research findings were as discussed in the section that follows.

4.1. Cost of Financing and Affordability of Housing

The study analysed data on cost of financing based of 8 questionnaire items in table 2. The findings were as summarised.

Table 2. *Cost of Financing.*

Statement	NE	SE	ME	LE	VLE	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev
Cost of building materials is high for me	3 0.9%	13 3.9%	37 11.1%	172 51.7%	108 32.4%	4.11	0.814
Land prices are high for me	7 2.1%	15 4.5%	47 14.1%	177 53.2%	87 26.1%	3.97	0.879
Cost of professional services associated with housing are not within my reach	17 5.1%	22 6.6%	40 12.0%	151 45.3%	103 30.9%	3.90	1.071
I am unable to access mortgage facilities	15 4.5%	9 2.7%	27 8.1%	180 54.1%	102 30.6%	4.04	0.950
Transport costs associated to building are high for me	7 2.1%	26 7.8%	36 10.8%	193 58.0%	71 21.3%	3.89	0.901
I am unable to meet the labour costs for building	8 2.4%	19 5.7%	33 9.9%	173 52.0%	100 30.0%	4.02	0.920
Government related charges on building are unaffordable to me	13 3.9%	8 2.4%	44 13.2%	186 55.9%	82 24.6%	3.95	0.909
Support services towards building such as water and electricity are costly for me	0 0.0%	23 6.9%	43 12.9%	193 58.0%	74 22.2%	3.95	0.792

From the findings in table 2, it was evident that cost of building materials was high (majority, 51.7%) of the respondents contending. Only 0.9% of the respondents were of contrary opinions. This is further supported by a high mean of 4.11. In addition, the standard deviation of 0.814 was an indication that there was consensus among the respondents that the cost of building materials was largely high leading to a conclusion that cost of materials for building are high and the prices keeps increasing each year making it more difficult to own a home as time goes by. This leads to an impression that building a house has become a serious commitment. These findings concur with those by [6, 25] that cost of building materials is a significant negative determinant of housing affordability.

Land price in Nakuru County is generally high as evidenced by (majority, 53.2%) of the respondents. Consequently, the respondents felt that land prices were on the rise high raised concern that this is a hindrance to affordability of housing. From the interviews however, it was observed that prices for land is high depending on where the land is located but this can't be a hindrance to building since the land will never be cheaper. In addition, there are loan facilities that can be issued to even the low income earners if they are patient enough to save for a longer time. The findings are in agreement with those of [33] that cost of land is significant determinant of access to affordable housing, especially in urban areas.

Access to and cost of professional services associated with housing was identified in this study as a significant factor when it comes to housing affordability. The respondents generally observed that access to professional services was on the lower side as indicated by the mean of 3.9. However, access to the services may not be limited to everyone as indicated by the higher standard deviation of 1.071. These findings indicate low consensus among the respondents on the professional cost associated with housing, implying that there were portion of the respondents who had the opinion that the cost of professional services related to housing were

beyond their reach and those who felt that the costs are within their reach. From the interviews, it was clear that most mortgage financial institutions, housing cooperative societies and real estate developers and agents provide free professional services on housing. Low income earners just need to approach their preferred institutions for those professional services. The findings are consisted with those of [1, 6] that low income households could not manage to hire professional services and those of [17] that professional services and advice on mortgage terms made it difficult for low-income earners to afford mortgage facilities and hence to own houses.

Accessibility to mortgage was also considered as a potential determinant of housing affordability. The respondents contended that loan access among low income households was low. On the other hand, the stakeholder interviewed indicated that loans were available for every one as long as they adhere to the guidelines available of financing. It was evident that loans are to a large extent available according to the financial capacity of individuals to repay the loans. For low income earners, they need to save for a long time in order to acquire a substantial loan to enable them meets their housing needs. These findings are in agreement with what [21, 33] that high mortgage rate is one of the challenges identified in accessing affordable housing through mortgage financing. They content that one of the greatest challenges to housing affordability is mortgage interest rates. Study by [10, 17] found that increasing mortgage interest rates and mortgage prices make it difficult.

Transport associated costs are generally high in house development projects. On the same statement, there was a contrary opinion by 2.1% of the respondents indicating that to no extent was the cost of transportation high. Generally, the high cost is felt by all households in Nakuru County as evidenced by low standard deviation. Close related is the labor cost. Analysis of collected data reveals that labor cost of building is high at (52.0% with mean of 4.2) agreement. The standard deviation of 0.920 was an indication that there

was less variance in the response of the respondents. The current findings are in support of the finding of [24] that low income households experience challenges of affordability of acquisition, transportation of housing materials and other related items as well as labour costs. However, [31] found that transportation of construction materials was not a major challenge to most of low income households; the major challenge was affordability of the construction materials.

On government related charges, majority (55.9%) of the respondents expressed that, government related charges to building were high, with less deviation as evidenced by low standard deviation of less than 1.000 (0.909). On the other hand, the interviewed stakeholders seemed to partially agree with this in which one of them indicated that; "It is true that permits for construction and other related issues such as land rates, rent and stamp duties are expensive to most low income earners but most housing cooperative societies and some real estate developers assist their clients in ensuring they adhere to the regulations and requirements for avoidance of future problems." The findings echo the findings by [8, 5] who found that affordability of housing was the major challenge of most of low income households in Nigeria due to the cost associated with building such as the cost of materials, labor and licenses as well as permits for construction and that of [26] that construction costs involved labour, materials, equipment, and transport costs during the

construction of the house project. They further found that the major component of the construction costs is the price of the construction materials.

Majority (58.0%) of the households agreed that availability of amenities such as water and electricity were costly. The standard deviation of 0.792 indicated that there was less variance among the households. It was thus established that there was a consensus among the subjects of the study that support services towards building such as water and electricity were costly among the respondents. [14] found that the cost of utilities such as water and electricity, and maintenance fees such as land rates and taxation increased the total costs of housing, even beyond 40% of their disposable income and thus the house was considered unaffordable to most low income households in India. Support services towards building was seen as a key determinant to housing affordability by [33] and thus indicating the low income households in Nakuru county face challenges in housing affordability.

4.2. Affordability of Housing

Respondents had opportunity to give views on the questionnaire items on affordability of housing. The findings were as presented in table 3.

Table 3. Descriptive Analysis of Affordability of Housing.

Statement	NE	SE	ME	LE	VLE	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev
I cannot afford to build a house with desired features	7 2.1%	15 4.5%	31 9.3%	189 56.8%	91 27.3%	4.03	0.859
I cannot afford to rent a house with desired features	6 1.8%	11 3.3%	42 12.6%	173 52.0%	101 30.3%	4.06	0.850
I cannot afford to build a house that can accommodate my family members	14 4.2%	15 4.5%	41 12.3%	171 51.4%	92 27.6%	3.94	0.978
I cannot afford to rent a house that can accommodate my family members	19 5.7%	12 3.6%	26 7.8%	201 60.4%	75 22.5%	3.90	0.977
I cannot afford to build a house in a desired locality	6 1.8%	21 6.3%	38 11.4%	197 59.2%	71 21.3%	3.92	0.859
I cannot afford to rent a house in a desired locality	13 3.9%	25 7.5%	18 5.4%	185 55.6%	92 27.6%	3.95	0.991

Respondents largely could not afford to build a house with the desired features as evidenced by 56.8% acceptance and mean of 4.03. A further standard deviation of 0.859 was achieved in the metric hence implying that there was less variance in the responses. Similarly, affordability of to rent a houses with desired features, was not a reality for most respondents as evidenced by high percentage of 52.0% and mean of 4.06. A standard deviation achieved on this metric was 0.850 this was an indication that there was less variance among the respondents in relation to the indicator. Focusing on affordability of building and renting houses with desired features, majority of the stakeholders indicated that most low income earners do not have adequate financial capacity to afford houses with desired features. These findings concur with those by [16] that building a house with desired features was major challenge to most of low income earners and thus

limiting the ability to own decent housing. Similarly, [27] present that high housing prices was cited as the greatest barrier to owning houses with desired features.

Majority (51.4% with mean of 3.94) of the households expressed that they could not afford to build a house that could accommodate members of their families. The standard deviation of 0.978 implied that there was less variance among the respondents. With respect to size, a majority (60.4%) of the respondents opined that they could not afford to rent a house that was big enough to accommodate their family members. The standard deviation of 0.977 implied less variance in the responses. From the interview, it came out that low income earners have low incomes that can not enable them construct or rent big houses that could accommodate all family members. Most of the low income households have big families and could only manage to

construct or rent single rooms or house with fewer rooms than needed in the family. The findings concur with those of [13] that low income cannot comfortably accommodate all household members and thus the houses were crowded. Similarly, [4] found that big house to accommodate large family members were expensive and that low income earners could not afford to rent such a houses leading to congestion of big families in single rooms.

The ability of the households to build a house in the desired locality was also considered in the study. Majority (59.2% with mean score of 3.92) of the households agreed that they could not build a house in a desired locality. Similarly, majority (55.6% with mean of 3.95) of the respondents contended that they could not afford to rent a house in a desired locality. This was an indication that there was a consensus among the households that to a large extent, low income households from Nakuru County could not afford to rent a house in the desired locality. These findings were consistent to those of [9, 27] that houses in desired places were highly priced and that low income earners were unable to afford and this led them to live in places that they did not fully desire due to financial constraints. Similarly, [20, 30] reported negative correlation between desired place of living and the actual place of living and thus indicating that most of low income individuals lived in places they did not fully desired to lack of financial capacity to afford rent for houses in desired places. From the interview, it was evident that most low income individuals cannot be able to afford houses in their most preferred locality due to high prices of the houses. Most houses in prime places in Nakuru County are beyond the reach of most of low income households and therefore only the rich can afford the houses.

Few low income earners are however able to acquire houses in such localities after a long time of saving.

4.3. Cost of House Financing and Affordability of Housing

Correlation analysis was conducted to examine the relationship between cost of financing and affordability of housing. The findings were as summarized in table 4.

Table 4. Correlation Analysis.

Variables	Affordability of Housing	
	R	-0.440**
Cost of House Financing	p-value	0.000
	N	333

The Pearson correlation coefficient of -0.440 at 5% ($p < 0.05$) indicates negative significant relationship between cost of house financing and affordability of housing. These findings imply that with increase cost of house financing makes housing more expensive. This finding is in line with those of [7] that lower income households had significantly lower household ownership aspects. Similarly, [13] established that high cost of house financing result in low levels of affordability among low-come households. In another study, [14, 32] found a statistically significant negative correlation between mortgage cost and access to mortgage and thus implying that an increase in the mortgage cost resulted in decreasing mortgage accessibility and reduced housing affordability levels.

Regression analysis was conducted to establish the explanation power of cost of house financing on affordability of housing. The findings were as presented in table 5.

Table 5. Regression Coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.882	0.078		11.241	0.000
Cost of House Financing	-0.186	0.012	-0.437	-15.507	0.000

Dependent Variable: House Affordability

The findings in table 5 indicate that cost of house financing has significant negative effect on affordability of housing. $\beta = -0.186$ indicate that unit increase in cost of financing leads to 0.186 decrease in affordability of housing. Similarly, $t = -15.507, p < 0.05$ indicate statistically significant negative effect of cost of finance on affordability of housing. Other studies; [12, 24, 16] too established that high cost of house financing reduces the affordability of housing while low cost in housing financing was the reason for high affordability of housing among the low income households.

5. Conclusion and Recommendation

It was concluded that the most of the low income households in Nakuru East and Nakuru West Sub-Counties were to a large extent unable to afford several components of housing. The study further concluded that the cost of house

financing negatively affected the level of affordability of housing among the low income households in Nakuru East and Nakuru West Sub-Counties.

The study recommends that the government and other players in the housing sector both in public and private sector consider subsidizing cost of financing of housing facilities. In addition, deliberate effort can be made to subsidize housing materials as well as amenities such as water and electricity. The government can partner with financial institutions as well as private investment organizations to offer more affordable housing solutions to the general public.

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