

Assessment of Public Housing Affordability in Kano Metropolis, Nigeria

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Abstract The paper assesses the extent of public housing affordability in Kano metropolis. Using survey research design approach, four Housing Estates with a population of 1,635 dwelling units were purposively chosen namely; Danladi Nasidi, Zawaciki, Jido and Wailari. A sample size of 314 households was selected using population proportionate sample size (PPS) while the respondents were selected by simple random sampling technique (SRS). The data was collected using structured interviews and questionnaire survey; where 314 copies of the questionnaires were distributed and 312 retrieved representing 99.4%. The data from the questionnaire was analyzed using Logistic regression analysis to measure the relationship between the major predictors of housing affordability that include income, housing expenditure and housing type. The result shows that the full model containing all predictors was statistically significant, $X^2(3, N=300) = 200,007$. The most important predictor among the independent variables was monthly income with odd ratio of 8.618, followed by the housing type which has an odd ratio of 6.196 while monthly expenditure has the least odd ratio of 2.807. This indicates a serious housing affordability problem among the households in the study area. The paper found out that a majority of the respondents was living on rent in the public sector housing estates as a result of housing affordability problems. Data analysis further shows that housing prices are at variance with income of many households in the estates which makes housing affordability a major concern. Based on that, therefore the paper recommends policy review to consider the amount requested for each of the housing units from households willing to purchase the houses. Government should introduce Housing Mortgage system, spreads the payment period and reduces the interest rates to encourage households to own the housing units. Furthermore, the use of local building materials should be encouraged especially by government contractors because they are relatively cheaper and this will reduce the production cost of public housing units thereby increasing the level of affordability among the different socio-economic groups in the society.

Keywords: *affordability, metropolis, housing, mortgage, Kano, estates*

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1. Introduction

Housing is viewed from a perspective that 'embraces all the components of the domestic environment that make up a neighbourhood; shelter, physical and social infrastructure, and services [1]. It is one of the basic human needs which provide protection against environmental factors. It has an important impact on the quality of man's life, health, welfare and serves as a measure of social standing and prestige in a given society [2]. Thus, housing is not only the structure to live in but also embodies the facilities and services that make life good and worth living. It therefore has enormous economic and social value.

The houses provided and operated by Government or non-profit organizations usually for the consumption of the low income households that pay below market rents are what are referred to affordable houses [3]. The need

for these housing is more in urban centers due to the concentration of poverty, incomes variation and homelessness [4].

Housing affordability has been a worldwide phenomenon and is one of the key factors that influence family socioeconomic stability and societal development in many countries. Stone, [5] described housing affordability as a challenge that a household faces in balancing the cost of its actual or potential housing on the one hand and the non-housing expenditures on the other, within the constraints of its income. Nicholas [6] noted that affordable housing comprises not only the cost of housing but also the housing standard, environmental factors as well as the cost of mortgage. Thus, in a nutshell one can describe Housing affordability as the ability of a household to acquire housing that meets socially acceptable standards within the limit of its income without falling below the poverty level.

Therefore, to understand Housing Affordability, information on household's income, housing price and the

housing expenditure are required. The extent of affordability can be measured from the ratio of the payment of housing services and other housing expenses and the household's total income. It is also noted that housing affordability problem varies from one society to another due to differential economic and social conditions. For instance, to some people all category of housing is affordable no matter how expensive it is, but to others, no housing is affordable unless it is free. Thus, according to Stone [5] affordable housing can have meaning only if three essential questions are answered.

1. Affordable to whom?
2. On what standard of affordability?
3. For how long?

Consequently, it is important to develop a reliable and valid socioeconomic group classification, because housing affordability aims at ensuring that the housing provided is affordable to every income category. Thus, the National Housing policy classified low income groups as; those wage earners or self-employed people who earn Five Thousand Naira and below (as at 1988) or those whose annual income is twenty percent below the maximum annual income of the highest salary grade level in the Civil Service structure at any given time. Adebayo and Iweka [7] adopted the Lagos State Development Property Corporation (LSDPC) classification which identified the low income group as those households whose monthly earning is N45, 000.00 and below. The medium-income group earn above Forty Five Thousand Naira and below One Hundred Thousand Naira only per month while the high-income group earn above One Hundred Thousand Naira. This paper adopted this classification because it is simple and very precise.

Lau [8] identified three basic approaches for measuring the rate of housing affordability; normative approach, behavioral approach and subjective approach. He further opined that the normative approach is the most developed of all the approaches due to the fact that it encompasses different measuring strategies including Rent-to-Income Ratio (RIR), Mortgage-to-Income Ratio (MIR) and House price-to-Income Ratio (PIR). All the measures put the household's income as a principal determinant of housing affordability. Furthermore, one of the conventional indicators of housing affordability based on expenditure to income ratio is that the housing expenditure should not exceed 30 percent of the household's annual income (i.e. 2.5% monthly). This is the bench mark identified by United State Housing and Urban Development (HUD). Thus, the household could spend 30% and still have enough left over for other nondiscretionary spending within the limit of its income. Failure to meet this, may lead to housing cost burden (i.e. more than 30 - 49.9%) or severely housing cost burden (i.e. when it spends more than 50%) [9]. However, besides the role of income towards the housing affordability, government on the other hand has numerous ways through which it influences the rate of housing affordability such as land use law, price control mechanism as well as financial policies like interest rate and foreign exchange rates [10].

The ability of a household to have access to affordable housing unit without denying itself the consumption of

other basic necessities of life such as food and clothing is what Nicholas [6] expressed as "affordability of Housing". He further noted that housing affordability involves not only the structure but also the housing standards, the environmental factors, the price of other necessities of life and the cost of mortgages the household must pay. Aribgbola [11] believed that affordability is concerned with securing some given standards of housing or different standard at a price or rent which does not impose an unreasonable burden on house holds' incomes. Therefore, to ensure the level of affordability, an index must be assumed in which only 30 percent of the household annual income should be spent on housing services. This was also contained in the United States Department of Housing and Urban Development (HUD) conventional public policy indicator for measuring housing affordability at different class of income. According to Stone [5]; Delgadillo and Jewkes, [12] this is because a household spending more than 30% of its gross annual income on total housing cost, including principal and interest payments on the mortgage, property taxes, utilities (which consist of electricity, gas, water and sewer) and insurance has a housing cost burden. But when the household spends more than 50% of its gross annual income on housing, it will have a severe housing cost burden.

Furthermore, proximity of housing to work place is another determinant of affordability as well as a critical component of a region's economic health. This, as explained by Alex, et al. [13] is because workers who must shuttle long distances spend an excessive amount of time on the roadways that could be spent at work, and are thereby less productive and more frustrated. This makes transport as an important concept to consider when thinking of affordable housing because households often make adjustments between housing and transport cost [14].

The affordability of public housing appears to be a problem especially to middle and low-income groups in Kano Metropolis despite the efforts made by government to provide public housing at both the federal and state levels. For instance, the Kano State government has been providing public housing units through its different agencies such as the State Housing Corporation and the State Investment and Properties Limited for close to four decades. However, lots of the people in the urban area have less access to the housing units and are living in degrading housing environment. This may not be unconnected with the large capital input that makes the housing units expensive, the relatively wide spread urban poverty, and the administrative and bureaucratic procedures. Therefore, the paper assesses public housing affordability in Kano with particular emphasis on Kano Metropolitan area. The objectives are to find out the extent of development of public housing units by the State government, measure the level of affordability to the housing units among the different socio-economic groups and identify the problems militating against public housing affordability in the Metropolitan area. The hypothesis that will be tested is that there is a low rate of public sector housing affordability amongst households in Kano Metropolis.

2. Study Area

Kano Metropolis is the study area and serves as the Administrative Capital of Kano State (Figure 1). The State is located at a distance of about 840km from the southern fringes of the great Sahara Desert (Danyaro, 1991). Kano State lies between Latitudes 11° 52'N to 12° 80'N and Longitudes 8° 22.5'E to 8° 40'E on altitude of 1549ft above sea level. Kano metropolitan area covers a radius of about 60sq km and the built environment occupies an area of about 48sq km [15]. It is made up of eight local government areas including Dala, Fagge, Gwale, Kumbotso, Municipal, Nassarawa, Tarauni, and Ungogo. Kano City is one of the fastest growing cities in Nigeria and the largest in the whole of the Northern part of the country. Demographically the State had a population of 5,810,340 people in 1991, out of which the Metropolis accounts for 1,432,255 people representing 24.3% of the total population of the state [16]. However, according to 2006 population census Kano state had 9,383,683 out of which the Metropolis accounted for 2,165,223 [17]. The current estimated population of the State is put at a little

over 11,000,000 people as of the year 2018.

The climate of Kano is a typical wet and dry climate with the mean annual rainfall of about 897.7 and maximum and minimum values are 1872mm and 419.6mm respectively. About 40 percent of the annual rainfall is usually received in the month of August.

Kano is known as the center of commerce and enjoys relative peace and tranquility and accepts inhabitants of other different cultures and beliefs, which enhances the status of the city as a great trading, commercial and industrial nucleus. The city began its commercial prowess with the trans-Saharan trade for which it served as a major entre-port producing powerful merchant class that maintained extensive external link as far back as 1850 [18].

According to Gambo [19] the commercial activities got boosted in the post-colonial period producing major markets and industrial estates including; Bompai, Sharada, Chalawa and Gunduwawa. These developments led to expansion of the built environment resulting in construction of different housing estates and development of residential infrastructures in the metropolis.

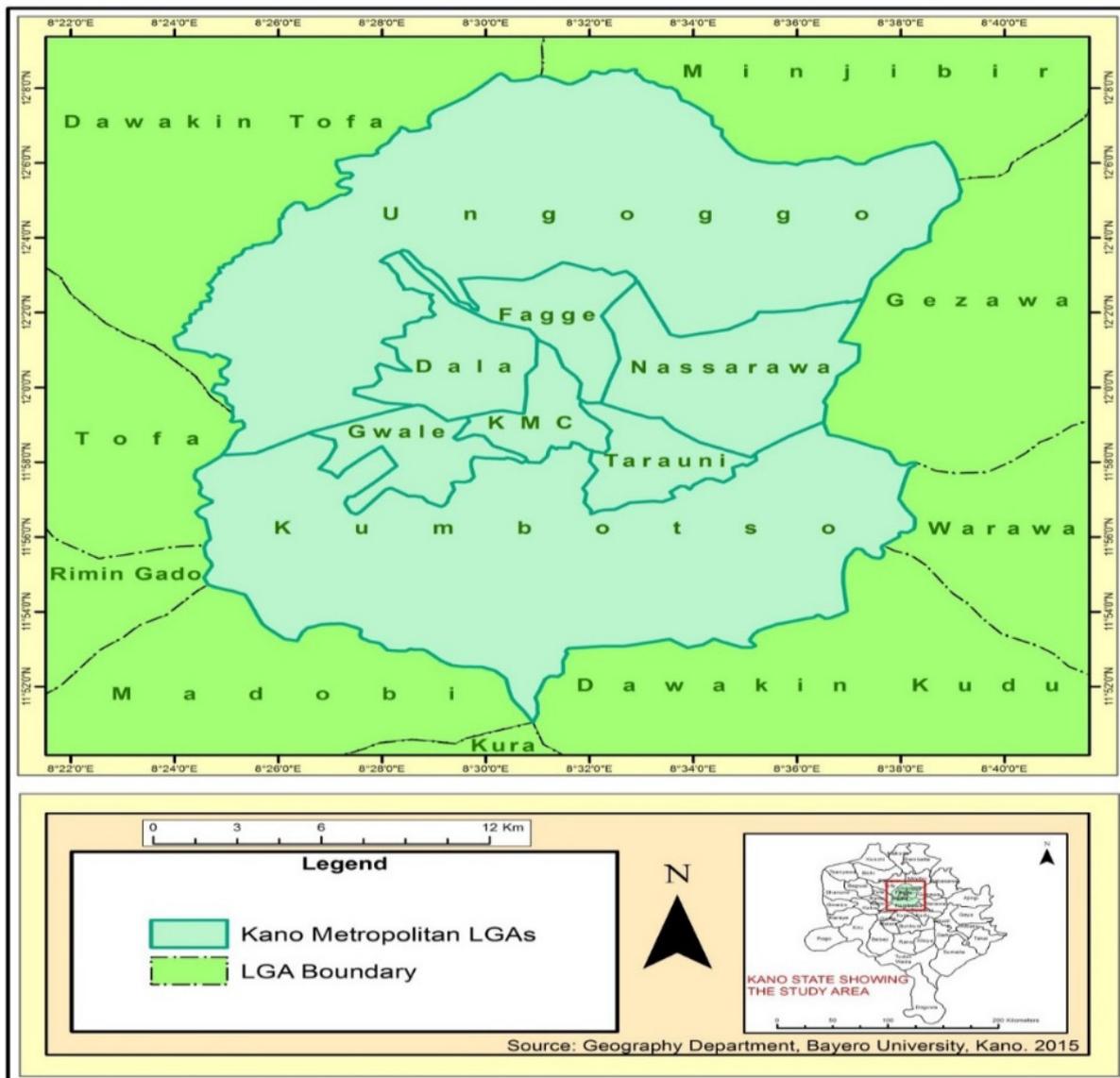


Figure 1. Kano Metropolitan Area

3. Materials and Method

3.1. Data Collection

The primary data was collected mainly from four housing estates namely; Danladi Nasidi, Jido, Wailari and Zawaciki all within Kano metropolis. Households were selected to respond to questionnaire instrument purposively designed to generate the data for the study. Equally, interviews were also conducted with some top-ranking government officials in the relevant ministries, agencies and government departments.

The paper utilised secondary data obtained from the existing literature and from official government records. The data on the existing government Housing Estates in the study area, the number of units in each estate, tenure of the occupants and property values were all collected from these sources. A total of 314 households participated in the study from the four estates; the head of each household was identified and administered with Questionnaires. The questionnaire requested information on socioeconomic attributes of the households such as housing type, housing expenditure and housing tenure. The distribution of the questionnaire respondents was spread across the study sites and is presented on [Table 1](#).

Table 1. Sample Size by Housing Estate

Housing estate	Number of houses	Sampling size using Probability Proportionate Sample size
Danladi Nasidi	1301	249
Zawaciki	212	41
Jido	76	15
Wailari	46	9
Total	1635	314

Source: Field work.

3.2. Sampling Technique

Although there are Fourteen Housing Estates in Kano Metropolis that jointly account for a total of 6896 housing units, only the four estates mentioned above were purposively selected for this study. The sample size was derived using Krijcie and Morgan [20]. The four sampled estates jointly account for 1635 housing units. Furthermore, the number of the respondents in each of the selected Housing Estates was determined using Population Proportionate Sample Size (PPS).

Multistage sampling technique was employed where purposive sampling method was used in the selection of the housing estates. This takes into consideration the age of the estates, for example Ja'oji, Sabon Gari, Tarauni, Kundila, Zoo Road, Gwammaja and Sabo Garba Housing estates were the oldest developed by the state government. Most of the housing units in these estates were already sold to the occupants while those at Umarawa, Kwankwasiyya, Amana and Bandirawo were relatively new and have not been fully occupied. Therefore, four housing estates were purposively selected namely: Danladi Nasidi, Jido, Wailari and Zawaciki because they are not old and are not among the recently constructed ones. Furthermore, they were developed for the low and

middle-income groups and the units are fully occupied. At the next stage of sampling, the households' respondents to the questionnaire in each of the estates were selected using Simple Random Sampling (SRS) technique. This ensures that each and every household has equal chances of being chosen to participate in the study therefore; the 314 households were identified from the four housing estates.

Structured interviews were also conducted with the high ranking government officials in the relevant ministries and government departments namely; Ministry of Land and Physical Planning, the State Housing Corporation and Kano State Investments and Properties (KSIP). The data collected from these interviews are based on policy issues on state housing programs, the role of government towards public housing development in the state as well as other relevant data such as housing statistics. In each of these government departments and agencies, one official was interviewed (see [Table 2](#)).

Table 2. Government Agencies Interviewed

Organisations	Number of staff interviewed
Ministry of Land and Physical Planning,	1
The State Housing Corporation	1
Kano State Investments and Properties (KSIP)	1
Total	3

Source: Field work 2016.

3.3. Method of Data Analysis and Presentation

The data was analyzed using Logistic regression analysis (because the dependent variable is categorical/dichotomous) which enabled us to measure the sets of predicting variables (households' monthly income, housing expenditure and housing type) that determine the dependent variable (Public housing affordability) in the Study area which is the housing tenure.

The level of housing affordability in the study area was determined by considering the major determinants of housing affordability such as monthly income, monthly housing expenditure and the housing type. The conceptual hypothesis of the study states that there is low rate of public housing affordability in the study area. Thus, to test this hypothesis, a Logistic regression analysis was used to predict the determinants of housing affordability among the independents variables in the study area.

3.3.1. Case Processing Summary of the Logistic Regression Analysis and Omnibus Tests of Model Coefficients

[Table 3](#) shows a direct logistic regression which was performed to assess the affordability of public housing in Kano metropolis. The model contained three independent variables (monthly income, monthly expenditure, and housing type) as predictors which were statistically significant, $\chi^2(3, N= 300) = 200, 007, p < .001$ (see [Table 4](#)). It indicated that the model was able to distinguish between respondents who report and those who did not report their housing affordability (which is represented by housing tenure).

Table 3. Case processing summary of the logistic regression analysis

Unweight Cases		N	Percent
Selected Cases	Included in Analysis	300	96.2
	Missing Cases	12	3.8
	Total	312	100.0

Source: Field work 2016.

Table 4. Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	200.007	3	.000
	Block	200.007	3	.000
	Model	200.007	3	.000

Source: Field work 2016.

3.3.2. Model Summary of the Logistic Regression

Table 5 indicated that the model as a whole explained between 48.7% (Cox and Snell R square) and 65.4% (Nagelkerke R square) of the variance in housing affordability of the public housing and correctly classified 93.0% of the cases (see Table 5).

Table 5. Model Summary of the logistic regression

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	208.168 ^a	.487	.654

Source: Field work 2016.

Table 6. Classification Table

Observed		Predicted			
		Housing tenure	Percentage Correct		
Step 1	Housing tenure	Tenant	163	11	93.7
	Owner	10	116	92.1	
	Overall Percentage				93.0

Source: Field work 2016.

3.3.3. Variables Predicting the Level of Housing Affordability

As shown on Table 7 all the independent variables (predictors) made a unique statistically significant contribution to the model (monthly income, monthly expenditure, and housing types). The result shows that the strongest predictor of assessing the housing affordability among the predicting variables was monthly income recording an odds ratio of 8.618. This indicated that the respondents who had problem with their level of income were over 8 times more likely to assess the public housing affordability problem than those who did not have problem with their level of monthly income controlling for all other factors in the model. Housing type is the next variable (predictor) after income for assessing the affordability in this model which recorded an odds ratio of 6.196. This indicated that the prices of the houses is over 6 times more likely to assess the housing affordability problem controlling for all other factors in the model.

The third predictor was monthly expenditure with an odds ratio of 2.807 that indicates for every additional expenditure there were over 2 times more likely to have housing affordability problem controlling for all other factors in the model.

Table 7. Variables predicting the level of housing affordability

		B	S.E.	Wald	df	sig	Exp.(B)
Step1	Income per month	2.154	.469	21.083	1	.000	8.618
	Expenditure per month	1.032	.504	4.197	1	.041	2.807
	Housing type	1.824	.284	41.287	1	.000	6.196
	Constant	-10.529	1.635	41.490	1	.000	.000

Source: Field work 2016.

Therefore, based on the above result of the logistic regression analysis between the major determinants, it shows a strong influence of the predictors (income, high housing expenditure and their housing type) over the housing affordability. Where the monthly income was the most important predictor of the housing affordability, indicating those with its problem were over 8 times more likely to have the housing affordability problem in the study area. This indicates that the household's income plays a greater role in determining the affordability of the public housing. This finding corroborates with [21] that the income level of a household is a core determinant of homeownership, which indicates the standard of a house (property) a household can afford as well as the rate of housing expenditure a particular household can engage in.

The housing type which is the second predictor and basically determining the housing price was over 6 times more likely to reflect the housing affordability problem controlling for other factors in the model. Equally this finding agrees with that of Baranoff, [22] that when he stated that:

‘The number of bed rooms in a housing unit, both 1 to 2 and 3 or more bedrooms, however, have a positive impact on medium housing unit price and are statistically and economically significant...’.

The monthly housing expenditure is the least predictor based on the result, though it also contributed significantly to the model, which indicates that the monthly expenditure of the households was over 2 times more likely to predict the housing affordability problem in the study area. This agreed with the Chung et al. [23] where they implied that in addition to rent and income, housing expenditure also affects the level of affordability to pay for housing, because the amount spent on housing expenditure would at the same time reduce one's income available for housing rent. Therefore, looking at the research findings as observed above, it can be reported that the extent of affordability of the public housing in the study area is generally low. This is presented in Figure 2 and it shows that majority (57.9%) of the respondent households in the survey have housing affordability problem (i.e. they were not able to afford their own houses) due to the level of their income, the high housing expenditure and the type of housing unit they occupy.

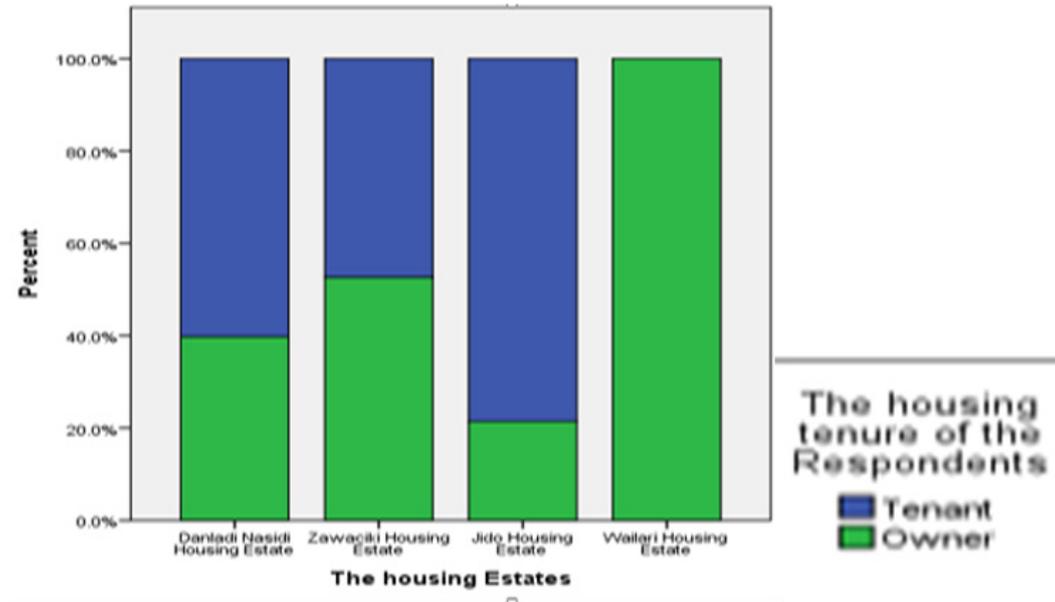


Figure 2. Housing tenure of the respondents

Furthermore, the data analysis has revealed that the rate of housing affordability varies from one estate to another. For instance, Danladi Nasidi and Jido housing estates have high number of tenants (see Figure 2) which indicates that they have low rate of housing affordability due to the high rates of housing expenditure (expenditure beyond the stipulated 30% percentage of income), type of housings (in case of Jido), level of household income and geographical location. Zawaciki housing estate however, has high rate of housing affordability due to their housing cost and geographical location. Wailari on the other hand happened to have the highest level of affordability due to their geographical location, source of income and the mode of housing possession. Therefore, based on these findings, the null hypothesis is to be accepted, which states that there is low rate of public housing affordability in the study area.

4. Conclusion and Recommendations

The Study identified the extent of Public Housing affordability in Kano metropolis and noted a remarkable influence of some socio-economic features upon the affordability level of the urban residents. The data was collected through the use of questionnaire administered to 314 respondents in the study sites including Danladi Nasidi, Zawaciki, Jido and Wailari, which were purposively sampled. The paper adopted 'Nominal approach' which comprises four different strategies of measuring affordability; including Price-to-Income-Ratio (PIR), Mortgage-to-Income-Ratio (MIR), Rent-to-Income-Ratio (RIR) and Expenditure-to-Income Ratio (EIR).

Using Logistic regression analysis between the three main independent variables of the housing affordability, findings revealed that the predictors including monthly income, housing expenditure and housing type contributed significantly to the model, implying that these variables have lot of influence upon the housing affordability level in the study area. It shows that the monthly income is the

strongest predictor with over eight (8) times in assessing the public housing affordability problem. Housing type was over six (6) times and housing expenditure was over two (2) times (Table 7). Generally, based on the findings the paper concludes that the level of public housing affordability in Kano Metropolis was low. This is considering the fact that large numbers of the households are living on rent. It was also observed that the affordability level was high to the higher income earners than to the low and middle income groups.

Based on the above findings and observations the paper presents the following recommendations;

1. To increase public sector housing affordability, the government should embrace the mortgage housing system and reduce the amount requested as down payment from households. In the same direction, the mortgage period should be spread to enable households pay their housing cost with ease.
2. The government should consider developing Rental housing units in its housing policy in order to provide readily available and affordable public houses for the growing urban households.
3. Government should consider providing housing loans especially to state civil servants in order to encourage them to purchase the housing units built by its agencies such as the ones recently developed at Kwankwasiyya, Amana and Bandirawo.

Government departments and agencies tasked with the development of public sector housing units should sourced and utilize local building materials in order to reduce the cost of the housing units due to importation of foreign ones. This will help in producing cheaper and affordable houses for the teeming population in the metropolis.

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