The Nigerian Mortgage Finance Market:
An Empirical Investigation of Associated Constraints.

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Abstract

This study provided a robust examination of the Nigerian mortgage finance market with emphasises on demand for mortgage finance and supply of fund for mortgage finance. The research focused on the empirical determination of associated constraints limiting the development of the mortgage market.

The study examined existing literature on the demand for mortgage finance to shape and identify the determinants and limiting factors militating against the development of the mortgage market in Nigeria. The research used household level dataset which contain household information such as consumption level, mortgage and financial information. The research found out that demand for mortgage finance is determined by household income, family size, educational qualification, age, marital status, geographical differences, location, infrastructural facilities, number of rooms etc. The consumption pattern of age-group on the demand for mortgage finance in Nigeria further revealed that there is different consumption pattern between the age-groups in Nigeria. This research evidenced it that household income, family size, educational attainment, age, marital status, geographical difference, location, infrastructural facilities, number of rooms are determinants for the demand for mortgage finance across the age-groups in Nigeria. Based on the findings, it suggests that household's access to mortgage finance will be influenced by the above determinants.

The impact of rationing by financial institutions particularly banks on the demand for mortgage finance on the Nigeria households was investigated. This research evidenced rationing ceased after the bank recapitalization exercise of 2005 but in 2006-2007 due to bad management, global financial crisis, poor ethical and professionalism, poor corporate governance policies, mismanagement of funds and inexperience staffs, rationing returned. This finding suggests that rationing in the Nigeria mortgage market still exist.

This research further investigated the roles of financial institutions particularly banks' ability to grant of long-term credit (mortgage finance), which is central to the development and effectiveness of any mortgage market. The research used annual dataset from 1981-2017 from Central Bank of Nigeria, World bank etc. The research found out that bank specific factors, macroeconomic situations, industry factors and the institutional issues influence the ability of bank to grant the long-term funds needed in the mortgage market. This research finding suggest that a developed financial market in Nigeria which can provided the needed mortgage

finance requires a robust macroeconomy, vibrate banks and a strong institutional structure.

This research investigated the perception of the senior bankers and loan managers on the problems of the mortgage market. A self-structured questionnaire was distributed online. This provided a qualitative perspective to this research. The research found out that the perceptions of the senior bankers and loan managers aligns with the quantitative side of this research. This research evidenced it that policy and regulatory challenges, housing challenges, macroeconomics challenges, institutional challenges, and financial challenges are the factors affecting the development of the mortgage market. Furthermore, data collected from the section provided a robustness check to the research and thus, it found confirmed the findings from the part of the research.

This research provides policy makers and analysts with the tools, which can be used to overcome the identified constraints.

1.0 Chapter 1: Introduction

The role of housing accommodation is very important to have a good standard of living and the ability to secure a suitable property is essential to every households whether in developed economies or emerging economies. To acquire the households desired properties is the function of a mortgage market. A functioning mortgage market will bring together those that demand for and supply for funds needed to buy the household's desired properties.

This market is well developed and structured in advanced countries such as United States, Canada, United Kingdom, Germany etc. to mention a few. This is a result of many factors that contributed to the delivery of a housing market that can provide reasonable and affordable housing. For instance, availability of land, building materials, good infrastructural development, policies and regulations and a robust financial system. The government in those countries gave priority to the housing market.

This is not same in sub-Sahara Africa, particularly Nigeria. The countries are characterised with high poverty rate, unemployment, decaying infrastructure, political instability, corruption, high population growth, depressed economy to mention a few. This research will focus on Nigeria and will critically explore factors militating against the development of the mortgage market and why the mortgage market is not well developed to provide the funds needed in the housing market.

On the household perspective, suitable housing should provide both psychological and physiological needs for privacy and personal space. It also serves as a physical barrier against unwanted interferences, and from the severe weather. The ownership of such could be very expensive and with the low income of the households such desire may not become reality. This is based on the argument that access to the mortgage market require a regular source of income which should be sustainable through the span of the mortgage. Since housing is the biggest consumption the household will purchase throughout their lifetime, a significant investment is required to purchase their dream home.

Furthermore, legal system to protect households, infrastructural facilities, accessibility and location and religion could influence the demand for housing. An efficient legal system will

ensure the legal searches and title perfection are completed within a short time. Where this is not in place, this will be an additional cost to the households. Adequate infrastructural facilities such as good road, electricity, water supply will encourage households to demand for housing and where these are not available, this will impact the demand for housing and mortgage finance. This research will critically investigate the factors affecting the demand side of the mortgage market.

Finance is critical in the mortgage market of an economy; thus, the role of the financial system architecture play a significant impact on how effective the mortgage market will be. Banks and other financial Institutions supply the funds needed in mortgage market. The ability of banks to grant the long-term funds is a critical factor in the performance of the mortgage market. In some cases, many banks in sub-Sahara Africa cannot supply the finances needed in the mortgage market. For instance, in Nigeria, the banking institutions are divided into three tiers and only the first tier actively participate in the mortgage market.

To determine the ability of banks to grant the long-term funds needed in the mortgage market, bank performance is important. This is because it is only a performing bank that can actively carry out its financial intermediation function. Studies such as Demirguc-kunt and Detragiache (1998), Anthanasoglou at el (2005), Flamini at el (2009), Akinwunmi (2009) have investigated bank performance in one form or the other. But none in term of the mortgage market. The ability of banks to grant the long-term funds needed in the mortgage market will be considered along the following determinants such as bank specific, industry specific, macroeconomic and institutional determinants.

The Nigerian Government over the years have set up policies and National development targets which was meant to improve the performance of the Housing sector. A quick look at these policies from 1960 to this present suggests that the policies and National developmental plans have not actually lifted to expectations, this resulted in housing sector in Nigeria having between 16 -20 million housing units' deficit and requires 12 – 20 trillion Naira to fund the housing deficit (Nubi, 2014). Nubi (2014) emphasized that policy failures are the contributory factor to about 60% of the current population lacking adequate housing and growth of slums

population in Nigeria. He argued that the main reasons the policies failed to perform is the failure of policy makers and analysts to realise that policies that were implemented in developed economies may not be suitable for an emerging economy like Nigeria. This research will investigate the causal factors and reasons that those policies did not work and a critical examination on how policies have the same level of success across board irrespective of the peculiarities of economic and social conditions of different areas?

1.1 Justification for this study

Various researches both theoretical and empirical have been carried out in the area of mortgage finance in many countries especially the developed economies. However, a lot of respected academia's have researched on mortgage markets in USA, UK and Canada to mention a few. Many studies in these countries, emphasized the demand for mortgage finance from the perspective of the size of the mortgage and the findings from these revealed that relative cost of a mortgage, household income and other personal characteristics have a great influence on the demand for mortgage debt. For instance, in the papers of loannides (1989); Jones (1993, 1994, 1995); Leece 1995 (a); Follarin and Dunsky, 1997. Furthermore, Ling and McGill (1998) adopted a different method by using a simultaneous estimation of mortgage and housing demand. Such econometric research approach described for advanced economies above, which critically investigates the mortgage market in Nigeria is non-existence. This necessitated this research. All the recent researches done on the demand for mortgage finance in the Nigeria context are descriptive in nature and few are quantitatively determined.

The only quantitative study on the demand for mortgage finance was carried out by Ubogu (1988) which used simple regression analysis to estimate the demand for mortgage finance in Nigeria. The study emphasized that the demand for mortgage finance was determined by mortgage rate, average annual household income, loan to income ratio, average actual down payment and down payments ratio. The study findings were that household income and down payment ratio are the most influential determinants of the demand for mortgage finance.

The studies on the demand for mortgage finance in Nigeria are basically descriptive in nature. This lack of formal empirical analysis on the demand for mortgage finance should be exposed to research rigour in the academic domain (Akinwunmi 2009).

Another significant contribution of this research was to examine the role of the financial institution in the supply of funds in the mortgage finance market. Supply of funds is the hub of the mortgage market and the effectiveness of the financial institution particularly the banks is critical to achieving this. To critically understand this, this research will analyse the performance of banks through its financial intermediation activities. Many studies that focused on bank performance will be reviewed. For instance, theoretical and empirical models in Demirguc-kunt and Detragiache (1998), Anthanasoglou at el (2005), Flamini at el (2009) and Akinwunmi (2009). These researches argued that the ability of financial institutions particularly banks to perform its financial intermediation activities is dependent on bank specific, industry specific, macroeconomics and institutional determinants. This research adopted a similar model to the one described above. This research is the maiden research to look at this context in general and particularly applying it to an emerging economy like Nigeria. This is a gap this research will attempt to bridge.

This research will investigate the institutional and policy issues affecting the mortgage market in Nigeria. The theoretical perspective of the mortgage market emphasized that institutional, policy and regulatory issues could be mitigating the effectiveness of the mortgage market. This research will bring together critical literatures to identify these determinants in the Nigerian context.

As discussed above, this research will critically identify the constraints militating on the demand side and supply side of the mortgage market. Furthermore, the institutional and policy issues that will impact on the market will be established. The research will provide Government, policymakers and analysts with tools to overcome the identified constraints.

1.2 The Nigeria Economy

Nigeria is in West Africa in Africa with thirty-six states and its federal capital territory in Abuja. Nigeria is the seventh most populous country in the world with population of 203 million (World Bank, 2019) and by 2050, it will be third most populous country in the world. The Nigeria economy is mono economy and its main income comes from petroleum and its resources. This contributes more than 40% of GDP. Nigeria show that capacity have a mortgage market that contribute significantly to the GDP. However, considering the outstanding mortgage to its GDP, it is less than 10 %. This is a significant low if the outstanding

mortgage to GDP of advanced countries are considered.

At the macro level, it is ranked as the 21st largest economy in the world in terms of nominal GDP, and the 20th largest in terms of Purchasing Power Parity, with annual growth rate of 6.2% (World Bank, 2015). It is the largest economy in Africa; its re-emergent, though currently underperforming. Its manufacturing sector is the third-largest on the continent, and produces a large proportion of goods and services for the West African sub region and significant export to India (14.1%), Spain (10.3%), Netherlands (10.3%), South Africa (8.4%) and Brazil (5.1%)(NBS 2015). Unemployment rate is significantly high at 6.4% (NBS, 2015), Poverty level is high which was confirmed with GINI coefficient of 43.0 (World Bank, 2010). Inflation is maintained at a single digit of 9%, Net export is favourable as it stood at 40.22 billion dollars (CIA, 2014). However, Nigeria external debt stood at 23 billion dollars (NBS, 2018) and the foreign reserve stood at 45 billion dollars. The researcher is of the opinion that such economy should be able to support a robust housing market in term of it impacts on the demand and supply side of the market. In addition to this, the Nigerian Government have a refocused policy regime by redirecting its focus on actions to increase non-oil revenues through enhanced tax administration to block loopholes and deepening structural reforms for economic diversification. However, for the housing sector to succeed, a strong macroeconomic stability is an essential ingredient. For instance, a steady long run economic growth is required, low inflation rate, high employment rate and favourable balance of trade. Without these, housing sector may not blossom.

The financial sector has undergone various changes which produced a financial landscape characterised by large and strong banks, an improved and efficient payments system and improved financial infrastructure. This made Bank credit to be on the increase at an average rate of 10% annually since 2012 (CBN, 2014). However, a critical examination of the Bank credit revealed that short-term maturities remained dominant in the Nigeria financial system. Prior to 2005 before the recapitalisation exercise of the Banking industry, it is a widespread opinion that shortage in supply of funds and the stringent prudential criteria are part of the responsible factors for the colossal gap in the mortgage market. However, after the recapitalisation exercise, the demand for mortgage finance has still far outstripped its supply. This research will investigate factors that are responsible for the short-term nature of the Bank credit and why Financial Institutions are shying away from Mortgage loans which tenors are

more than twenty-five years.

The study of the associated constraints in the Nigeria Housing market cannot be completed without a regional investigation of those factors. Nigeria is a multi-cultural and ethnically with three main ethnic groups and many others. The population structure is made up of 44% below the age of 15 and 43% are between 15 and 49 years and the remaining are 17% are 50 years and above. The young nature of the population made people to migrate to urban centre due to adequate infrastructural facilities in such places. Barungi et al (2015) emphasized that population density pattern shows a north-south divide. This research will investigate and identify prominent constraints peculiar to the two region which will be useful for the Government and public analysts. In addition to the north- south divide, Nigeria is divided into six geopolitical zones which are North-East; North-West; North-Central; South-East; South-West and South-South. This research will investigate the limiting factors associated with those regions. This is important to reduce housing deficiency along the geo-political zones because in most case, Nigeria operations as a multi-party state and political agenda at the centre may be different to the zones. Policy makers and analysts at the zones can effectively identify constraints peculiar to their zones.

The demand for housing and thus demand for mortgage finance are established based on household decisions which are associated with economic, financial and demographical factors which influence their decisions whether to enter owner occupation or rent, whether to move or not, decision of their housing choice which is whether to borrow to buy a desired property or investment for return and what is the preferred location of the property. These are useful in the specification and estimation of demand for mortgage finance.

However, the econometric model will be explored for the demand for mortgage finance and demand for housing using the data set on household attributes which will reflect the above constraints. Also, this research intends to identify the contributory factors which impaired the growth in the mortgage market and the way to improve on them will be itemized. The study will develop a platform which can be used for policy formulation. The developed model can be used to forecast future demand for mortgage in accordance with the increasing population.

1.3 The aim of the study

The aim of this research is to identify and investigate the constraints, impediments and other factors limiting the development of the Nigerian mortgage market.

1.4 Research Objectives.

This research will explore and estimate econometrics models for the Nigeria mortgage market. This will be achieved by estimating models for the demand and the supply side of the mortgage market. This research will examine the regional prevalence, characteristics and determinants of housing market. In addition to this, the study will investigate the institutional factors and policy issues which could impact on the development of the market.

1.5 Research Questions.

* What are the drivers of demand for mortgage finance?

* What is the regional prevalence, characteristics and determinants of the mortgage market?

* In what ways do rationing affect the mortgage market in Nigeria? What are the impacts of credit rationing on the demand for mortgage finance?

* What are the roles of the financial institutions, particularly banks, in determining the supply of funds needed in the Mortgage market?

* What are practitioners' perspectives of the perceived operational efficiency and effectiveness of Banks and the mortgage market?

1.7 Limitation of the research

This research outcome is very important to answer the research questions. However, in other to accomplish the research objectives, it requires time and money. The capital-intensive nature is a major challenge to accomplish this research objective. This is because it is self-funded study. There is a time limit, within which the thesis must be submitted, working within this time limit is also a challenge.

1.8 Organisation of the thesis

The thesis consists of nine chapters which are organised as follows:

Chapter one discusses the general background to the research in form of introduction, justification of the study, aim and objectives, research questions. Furthermore, at the end of the chapter, a brief outline of the thesis was presented.

Chapter two examined the life cycle perspectives to the demand for housing and demand for mortgage finance. Extensive literatures were investigated, which looked at the household perspectives on the decision-making regarding housing consumption and thus, mortgage finance was discussed.

Chapter three examined the impact of rationing on the demand for mortgage finance and housing. An extensive discussion on the various types of rationing in literature was done.

Chapter four critically examined the supply side of the mortgage market (Supply of funds). The theoretical basis for lending was established and various theoretical and empirical models on both developed and emerging economies were reviewed.

Chapter five investigated and critically appraised the Nigerian Mortgage finance market.

Chapter six highlights the research approach, research design, data sources and procedure for the estimate of the study was discussed. Furthermore, this section included method, specification of the model(s) and setting the apriori conditions for the variables

Chapter seven presents the data analysis of the empirical investigation of the study of the Nigeria mortgage market. A quick descriptive analysis of the dataset to set the background of the study was done. Furthermore, econometric results were discussed and based on this, the constraints and limiting factors of the Nigeria mortgage market were identified.

Chapter eight details the summary of the study. The conclusion of the study inferred. Areas of further studies will be identified. Policy recommendations to improve the mortgage market in Nigeria will be carried

1.9   Summary

The Chapter has highlighted the assignments to be undertaken while investigating the constraints, impediments and other limiting factors affecting the development of the Nigeria

mortgage market. The importance of investigating these factors is to aid the government and policy analysts, in form of policy recommendations, to introduce various measures and tools that would be lend to the development of mortgage market in Nigeria. The research objectives and the research questions were developed in this chapter, which would aid the research to logical conclusions.

Chapter 2.0:   The Demand for Mortgage Finance

The mortgage market plays a critical role in any economy and its performance is an important indicator of national economy performance.   Chamber et al, (2009) argued that the performance of the mortgage market has a direct relationship with economic welfare of the individuals and the households. The mortgage debt as a percentage of GDP for United Kingdom and USA in 2011 was 83.7% and 76.1% respectively (Hypostat, 2012), however, such a vital sector in the Nigeria Economy is not given much emphasis, not even to talk of its importance to living standards but to its contributions to the economy as a whole. Nigeria with a population of over 203 million (World Bank 2019) should have a robust housing sector which can contribute to the development of the economy. In the absence of this, this research tends to look at the contributory factors to the problem.

This section will investigate factors that will impact on the performance of the mortgage market from the demand side perspective.

From the household perspective, housing consumption is the largest transactions to be done which will impact directly on the expenditure pattern and asset accumulation (Chamber et al, 2009). Thus, the household may not be capable to buy the desired property with their current cash flow. This invariably implies the households need a well-functioning financial system to make their demand effective. However, the functioning of the mortgage market determines the extent and nature of the demand for mortgage finance. Thus, this research will investigate those constraints that have impeded the households from housing consumption.

Building on the consumption functions, the theoretical basis of the demand for mortgage finance is centred on the permanent income/life cycle hypothesis. The households maximise their housing consumption based on their current income and future streams of income.

This household consumption is based on intertemporal substitution which emphasised households maximize their satisfaction from consuming a product by trading off resources between periods. These periods are earlier years known as period 1 and later years known as period 2. The underpinning background emphasized here, is that when the households are young and have prepared themselves either by acquiring formal education or training/apprenticeship may want to buy houses to live in now but they may not be able to pay or outrightly purchase the property because they are constrained by their current

earnings. However, they borrow from the financial institutions the total amount (mortgage) of the property and continue to pay throughout the working lifetime for the consumption of the property.

However, capital market imperfections, information problems and inefficiency in the system may prevent the household from borrowing to buy their desired houses and pay against future streams of income.

This section introduces the formal theoretical models of the demand for mortgage finance. Certainty in modelling exist when all the variables are known and can be estimated. Modelling the demand for mortgage under certainty conditions exist when fundamental indicators like future income, mortgage interest Rate, and house prices are known. Uncertainty exist when those indicators are not existing, incomplete or unknown. Under this condition, forecasted figures will have to be used for the estimates. This section analysed various models on demand for mortgage finance by examining the aims of the study, the theoretical perspective of the papers, the methods of estimation that was used, the key variables used and the shortcoming of the models, the econometrics issues encountered and based on this review identify a suitable model that can be adopted for this research.

Most of the theoretical models of demand for mortgage finance emphasized a dual motive of household buying a property which are consumption motive and investment motive. Consumption motive implies wanting a residency which can offer privacy and protection against the elements and on the other hand, investment motives simply implies that household can easily convert the property to cash either by selling it or remortgaging it. These motives could be making the modelling and analysis of housing finance difficult. (See Chambers et al (2009), Leece 2004, Arrondel and Lefebvre, (2001), Ioannides 1989, Brueckner 1997) and it is better not keeping the two aspect in any housing models (See Henderson and Ioannides, (1987), Ioannides and Rosenthal (1994).

However, this research will focus on the consumption motive of consuming a house and try to identify constraints that will be preventing the household to consume it. In order to identify a suitable model for the demand for mortgage finance, which is the aim of the section, the focus will be on papers (theoretical and empirical) on the demand for mortgages.

2.1 The demand for Mortgage finance

Many authors have researched and modelled the demand for mortgage finance, such as Brueckner 1994a, Jones 1993, 1994 1995; Follain and Dunsky 1997; Dunsky and Follain 2000, Leece 2006, Harrison et al 2004). In these models, household income, interest rate, housing prices and mortgage rate are all known with certainty. Leece (2004 p 30) emphasized the importance of certainty models of mortgage demand, which are: firstly, it shows a gradual process of modelling the demand for mortgage. Secondly, it made modelling simple and thirdly, informs the specifications of the demand for mortgage equations.

The discussion in this section will start with Brueckner (1994) paper.

2.1.1 Brueckner demand for mortgage model

Brueckner (1994) model structure was a two-period model which emphasized intertemporal substitution. The model emphasized that the amount of mortgage consumed is a function of the relationship between the mortgage interest rate and the rate of return on investment. This was argued that lower mortgage interest rate compared to rate of return on investment will increase the demand for mortgage finance and vice versa.

Brueckner (1994) model emphasized the significance of household wealth between the two periods. This is because the household wealth at the end of period 1 is same as the opening in period 2 of the household lifecycle.

Furthermore, the model emphasized that the household income is spent on either housing consumption (h) and non-housing consumption (x). The household decide the amount from its income that will maximize their decisions on housing, non-housing consumption and the levels of mortgage debt. Other factors that could impact on this includes house price, rate of return on saving and mortgage interest rate.

The household buys a property in period 1, this impact on the household wealth. This impact does affect the household consumption because the down payment needed for the household contribution was taken from the household wealth and does affect the amount available for spending on non-housing consumption.

The implication of this for the household is a reduced wealth which will constrain the household in period 2. Household will have to pay off both the loan amount and interest at the end of this period.

Based on this, it can be deduced that if there is a change in the mortgage contract, this will affect the household wealth at the end of period two. For instance, If the household

downsized on the mortgage contract, and consequently, the down payment on a property will reduce and resulting in the increase of the consumption on non-housing goods in first period but the household will have to pay more on the mortgage from the accumulated wealth in the second period.

The current period utility function is U (h, c) and the consumption expenditure decision made now is determined by the wealth (z) which determines the future utility. The future utility discounted value is given as $\xi V(z)$. Brueckner (1994) went further that the future could consist of more than a period and based on this assumption, the household utility is given as

$$U = U (h, x + \xi V(z)) \qquad\qquad 1$$

The household wealth (w) in period 1 is made up of current income and assets. The wealth can be used in three ways which are housing consumption, nonhousing consumption and for savings. However, the household is liquidity constraints in the earlier period (period 1), the household wealth can be complemented by borrowing against future income.

The household faced two budget constraints for the two periods. Brueckner (1994) denoted size of the mortgage as **m**, the amount of saving as **s** and purchase price per unit of the housing and the household first period budget constraint is then

$$X = w - s - (ph - m) \qquad\qquad 2$$

This is the amount available for the household to spend on non-housing consumption after down payment for the property had been paid. This is denoted by (X). Thus, "initial wealth" stand for (w), amount saved stands for (s) and the "down payment" on the property stands for (phH - m). However, the down payment is the difference between price per unit of the housing service (ph), the level of housing services (H) and the size of the mortgage debt (m). The mortgage loan-to-value ratio is denoted as $\alpha < 1$ which is the constraints governing s and m include

$$S \geq 0 \qquad\qquad\qquad\qquad\qquad 3$$
$$\alpha ph \geq m \qquad\qquad\qquad\qquad 4$$
$$m \geq 0 \qquad\qquad\qquad\qquad\qquad 5$$

From the above, equation 3 is the liquidity constraint, equation 4 is the loan-to-value constraint and equation 5 shows that mortgage must be positive.

The second period budget constraint according to Leece (2004) is associated with the level of

potential wealth (w). The household wealth is made up of the income received in the second period (y), returns on savings accumulated in the first period $(1 + rs)$ s and housing equity. The housing equity contribution to household wealth is the interest rate reduced balance of outstanding mortgage.

The second period budget constraint can be written as

$$Z = y + (1 + rs) s + ph - (1 + rm) m \qquad\qquad 6$$

The mortgage payment is interest only contract which will terminate at the end of the second period when the amount borrowed will be paid back. The household will maximize their utility based on the first period constraint (Consumption Constraint) and the second period wealth constraints.

The objective function becomes:

$$U\{w - s - (ph - m), h\} + \xi V \{y + (1 + rs)s + ph - (1 + rm)m\} \qquad\qquad 7$$

This is obtained by the substitution of the constraints on consumption and wealth into the utility function.

Brueckner (1994) stated that the optimization problem of the household is to choose housing consumption (h), amount of savings (s) and size of the mortgage (m) that will maximize subject to the liquidity constraint and loan-to-value constraints, where the mortgage is positive. Using the Kuhn-Tucker optimality conditions to solve the household optimization problem, the followings were obtained (see Brueckner, 1994)

$$s: -U_x + (1 + rs) \xi V' + \lambda = 0 \qquad\qquad 8$$

$$m: U_x + (1 + rm) \xi V' + \theta = 0 \qquad\qquad 9$$

$$h: -pU_x + U_h + p \xi V' + \alpha p € = 0 \qquad\qquad 10$$

If the following three conditions are satisfied

$$\lambda \geq 0, \lambda s = 0 \qquad\qquad 11$$

$$€ \geq 0, € (\alpha ph - m) = 0 \qquad\qquad 12$$

$$\theta \geq 0, \theta m = 0 \qquad\qquad 13$$

Equations 11, 12, 13 are derived based on the conditions of Kuhn-Tucker condition for equality constraints which are complementary slackness of gradient should be equal to zero and all Lagranger multiplier should be positive. Based on these conditions, Leece (2004, p 32) identified the following restrictions for the above model (a) Loan-to-value ratio cannot be more than 100% (b) Non-negativity of the household mortgage (c) household cannot have a negative saving. However, a negative household balance sheet implies the household is

borrowing to finance non-housing consumption (d) The present of liquidity constraint with borrowing is restricted to the finance of a property.

Brueckner (1994) rearrange equation 10 above to determine the optimal house size, the result obtain: Uh/Ux   =   p {1- (ꝼV′ +α€)/Ux.

The above equation is expressed as the marginal rate of substitution of the utility of housing and nonhousing consumption set equal to the ratio of the costs of the price of housing services (Leece 2004, p 49, Brueckner 1994).   If the MRS of housing consumption to nonhousing consumption is set less than their prices, which implies that housing consumption yields more benefits. This can be through higher future wealth that will accrue where the Loan-to-value constraint is relaxed.

Brueckner (1994) emphasized that taking the first order condition for equation 8 and 9 will determine the choice of amount of saving (s) and size of the mortgage (m).

If the two equations are set equal:

$$(1 + rs) \varsigma V′ + \lambda = (1 + rm) \varsigma V′ + \theta \qquad\qquad 14$$

This implies that the household choice depends on the magnitude of the rate of return on saving (rs) and mortgage rate (rm).

Empirically, Brueckner (1994) studies established a link between the mortgage size and several explanatory variables. He improved on the previous studies such as Ioannides (1989) and McGill (1993). Like these studies, Brueckner (1994) identified important variables for the estimation of mortgage demand such as house prices, initial wealth, future income, and the discount rate. In addition to the variables identified, other variables of interest that was considered are mortgage interest rate and rate of savings

Brueckner (1994) emphasized that for the model, house size should be considered as a choice variable and the mortgage demand equation should be estimated using an instrumental variables method with housing demand variables playing the role of instruments. The study argued that due to the endogeneity of the house size in the mortgage regression, a simultaneous equation system should be used in the estimation.

However, In Brueckner model used on Ioannides (1989) and Ling and McGill (1993) methods by including house size as an important variable to be considered when considering demand

for mortgage finance. His studies emphasized the impact of mortgage interest rate and rate of return on investment on the demand for mortgage finance. The model did not consider demographical factors and life cycle perspective in his model.

2.1.2 Follarin and Dunsky (1997) Demand for Mortgage Finance model.

The focus of the model was to investigate individual household behaviour on demand for mortgage finance and how such decisions is affected by tax system impact on the mortgage market and other factors such as variation in income, age, education etc. The paper emphasized the role/impact of federal tax policy on the demand for mortgage finance. It was believed that if the reduction or elimination of home mortgage interest deduction is done, such should have significant impact on the demand for mortgage finance.

Follarin and Dunsky (1997) argued that the elimination of the mortgage interest deduction has negative impact on the demand for owner-occupied housing and as a consequent, impact on the demand for mortgage finance. This will increase the cost of owner-occupied housing.

It has been demonstrated that the centrepiece of any econometric model of the demand for mortgage finance depends on the after-tax cost of equity and debt financed housing. Many papers such as Jones (1995), Lecce (2000) have specified different models for the demand for mortgage finance, a structural model have been considered. A structural model simultaneously determines the specification of both the demand for mortgage debt and demand for owner-occupied housing. Another form of specification commonly used in the estimation of demand for mortgage finance is reduced form specification. In both form of specification, demand for mortgage finance is commonly theorised to be determined by various variables such as after-tax income, age, educational level of the head of the family and the spouse etc. The equations are estimated for the entire sample of the individual household and a subgroup analyses can also be done. This was done to determine which of the subgroups is responsive compared to the entire sample.

Income distribution of the sample was also considered by disaggregating the sample to capture two groups which are: rich (Top 50%) and the bottom class, also the sample was analysed to determine those household that were liquidity constrained and those that were not. The study used two different datasets. The difference in data set necessitated the use of

different technique to analyse the sample. For instance, ordinary least square technique was used to analyse the 1983 survey of consumer finance (SCF) and two types of Tobit estimators were used on the 1989 SCF. This is a significant setback in the result because of the differences in the data set used. However, to reduce the biasedness of the results, a standardised dataset should have been used.

Before the empirical specification of the econometric models on the demand for mortgage finance can be done, a theoretical perspective underpinning the arguments were dealt with.

Follarin and Dunsky (1997) argued that most of the models of the demand for mortgage developed have some common characteristics. The argument is the maximisation of the household utility function. The common feature is when the utility functions which includes housing services, non-housing consumption, future wealth. This, however, could be subjected to budget constraint that depends on the rate of returns on the financial investments, initial wealth and the appreciation of the price of the housing assets. In addition, the end of two period's wealth, the household initial wealth, that is wealth at the start in the first period and the current price of the housing asset. They introduced the concept of uncertainty into the model of the demand of mortgage and this was used to capture the treatment of liquidity constraints in the model. Under uncertainty conditions, household wealth in the second period is an important determinant if the household utility will be maximized. For instance, If the second period wealth is not enough to offset the outstanding balance, the property may be foreclosed, thus the household may lose their equity. Due to the uncertainty about the future wealth, it is that point that uncertainty is introduced into the model.

In order to maximize the household expected utility, they must make choices on housing services (h), non-housing consumption (c), risky financial asset (B_e) and mortgage debt (M). The expected utility is the addition of the current period utility and a function of future expected wealth *E (W) and s^2(W),* the variance of wealth.

Follarin and Dunsky (1997) specified the household expected utility as:

$$E\ (U) = U(c,\ H) + F[\text{E(W)},\ \sigma^2(\text{W})]$$

It was deduced that the variance of wealth in the utility function is negative in nature. This implies that there is a trade-off between risk and return of housing debt and return on saving,

which due to uncertainty about the future wealth of the household. A rational household will have to make an optimal portfolio choice between the two options based on marginal benefits and its cost. It is of the believe that, if the house values will appreciate more than the returns on savings, then, a rational household should increase to the optimal the mortgage size now. However, if otherwise, the household will choose less mortgage debt which could impact on the household wealth in the final period. Based on these scenarios, two period budget constraints were introduced.

The budget constraints for the first period is

$$W_0 + I = P_C C + P_H H - M + B_e$$

Where W_0 denotes initial wealth, I denote income, M denotes mortgage debt, P_C represent first period's price of non-housing consumption, P_H represents unit price of housing stock at the beginning of the first period.

The budget constraints for second period, however, is stated in term of the expected wealth at the end of the second period.

$$E(W) = [1 + E(r_p) - \mathcal{T}_p - d] P_H H - (1 + r_m)M + [1 + E(r_e)] B_e + [1 + E(r_I)]I - t_y[I + E(r_e) B_e] + t_m(r_m M + \mathcal{T}_p P_H H]$$

And

$$\sigma^2(W) = E \{(W - E(W)^2$$

where $E(r_p)$ stands for expected appreciation rate of house prices, r_m stands for mortgage interest rate, $E(r_e)$ stands for expected return on risky financial asset, $E(r_I)$ stands for household expected increase in income, t_y stands for household marginal income tax, $\mathcal{T}_p$ stands for property tax rate, r_m stands for tax rate which mortgage interest and property tax can be deduct, E(W) stands for expected value of wealth and $s^2(W)$ stands for the variance of household wealth. Follarin and Dunsky (1997) emphasized that the variance of the household wealth is a function of variance and covariance of the returns on each component of the portfolio and the shares of the portfolio allocated to various assets and liabilities.

The assumptions of the model are as follows: (1) asset cannot be sold within the period (2) No investment is allowed at the mortgage rate or consumer credit rate. This implies that the

mortgage amounts and consumer credit cannot be negative. (3) Household wealth can be negative (4) Non-existence of 100% mortgage (5) Loan to income ratio should be less than one.

Leece (2004 p 35) argued that modelling the demand for mortgage debt may be difficult due to enormous data requirement and the model showed that uncertainty conditions can be expressed in the household utility.

Based on the concept of rationality, that is the household look at marginal benefit to marginal cost, the household look for the least cost method of financing its consumption and this method could be in form of debt or equity. If debt is used, that implies cost of debt is less than the return on equity, that means it is cheap to borrow than to save. Thus, the household will demand for their maximum loan to value. The household demand for mortgage could be zero if the cost of debt is greater than return on equity. This is because it is very expensive to borrow.

The household tends to maximize its utility to determine the non-housing consumption, housing services and the amount of mortgage finance to be used. Also, to determine the amount of equity to be used as down payment for the property. Follain and Dunsky (1997) argued that the values of non-housing consumption, housing services and the amount of mortgage finance (endogenous variables) depends on the household preference and the impact of the initial wealth, household income, and price of housing and the non-housing consumption (exogenous variables) in the model. The degree of elasticity of the demand for mortgage finance depends on the changes to cost of debt. For instance, if the cost of debt is high then equity can be used to finance the purchase of the property and verse visa. However, the elasticity will be low if the cost of debt and equity are similar.

The inclusion of income tax consideration in the model shed light on how tax policy can impact on the relative cost of debt and equity. This will now be pronounced if there are variations in the tax rate at which debt and equity are deducted. For instance, if the households have a tax exemption, such tax exemption will make the household to use mortgage finance to buy a property and the bigger property will be purchased. In the absence of this exemption, the tax impact on the cost of mortgage may prevent household using mortgage to finance to purchase of their desired property.

The impact of the liquidity constraints in the model. The impact is more on the first-time buyer.

This is because of their desire to enter owner occupation and the prospect of an expected growth in income is a factor that encouraged them to tend towards the use of debt options. For instance, if the household is liquidity constrained, that implies that the marginal cost of an additional money of debt is the after-tax cost of debt minus the shadow price linked with the liquidity constraint. This may be peculiar to young household with limited or no equity and a lot of non-housing expenses. It can be deduced that a binding liquidity constraint may be a ground for household to consider mortgage finance.

The introduction of uncertainty to the model change the situation. Uncertainty about the returns on the risky investment and the nature of the risk distribution may be a constraint for the demand for mortgage finance. Follarin and Dunsky (1997) argued that the household risk preferences, the nature of the distribution of returns and liquidity constraints could impact on the consumption of mortgage debt.

Empirically, Follarin and Dunsky argued that demand for mortgage finance should be part of the demand equation that will originate from the theoretical model developed from the above discussions. It was suggested that the system should be made up of model which include a demand for housing, a demand for non-housing consumption, asset demand equations and equations to explain the demand for mortgage and consumer debt. In considering this model, the following exogenous variables in the system include the household initial wealth, household income, the price of housing and non-housing, the after-tax prices of mortgage and consumer debt, and the after-tax returns on various types of financial assets. However, estimating such a complex model described above may be extremely challenging. This is because this model requires data on household choices, particularly non-housing consumption, the after-tax prices of mortgage and consumer debt, and the after-tax returns on various types of assets and liabilities may not be available. In addition to this, Utility maximisation problem could lead to a corner solution. This could occur if one of the liabilities is priced lesser than the other or if an arbitrage opportunity exists.

The first approach the paper considered was the reduced form equation to the estimation of the demand for mortgage finance. Follarin and Dunsky (1997) argued that in the reduced form equation, the critical exogenous variables are after tax costs of equity-financed housing investment, mortgage-debt-financed housing investments and consumer credit. Also, the wasted deductions, after-tax household income, and variables that could be used to capture

household preference for demand for mortgage debt.

The reduced-form equation was specified as

$$In\ M\ =\ \alpha_0\ +\ \alpha_1\{(1-\ t_y)r_e\ -\ (1-\ t_m)r_m\}+\ \alpha_2\{(1-\ t_c)r_c\ -\ (1-\ t_m)r_m\}+$$
$$\alpha_3\ WASTED\ +\ \alpha_4\ In\ Y_T\ +\ \alpha_5 Z,$$

The above can be explained as follows: WASTED is defined as the difference between the standard deduction and the amount of non-housing itemized available to the household, Y_T is defined as the household after-tax income and Z is defined as vector variables that could influence household decision to demand for mortgage finance. In the above model, r_c represents the cost of consumer credit; t_y represents marginal tax rate on income while t_m and t_c represent the deductible tax rate on the mortgage interest and consumer credit. It is worth mentioning that a very important variable, net worth was not included in the reduced form approach because Follarin and Dunsky (1997) treated this has an endogenous variable and argued that the empirical results will not be affected with or without its inclusion. The results, however, should emphasize its impact on the tax prices which are $\alpha_0\ and\ \alpha_1$. The coefficient of the tax price $\alpha_0\ and\ \alpha_1$ are expected to be positive. This implies that as cost of equity finance and cost of consumer credit increases, demand for mortgage finance should increase.

The Structural equation modelling was also considered. This form of structural equation which enable the demand for mortgage finance to depend on the demand for housing. Follarin and Dunsky (1998) modified the demand for mortgage finance to include the value of the property purchased and another reduced form equation specified for the value of the house purchased.

The demand for mortgage finance was presented as follows:

$$In\ M\ =\ \alpha_0\ +\ \alpha_1\{(1-\ t_y)r_e\ -\ (1-\ t_m)r_m\}+\ \alpha_2\{(1-\ t_c)r_c\ -\ (1-\ t_m)r_m\}$$
$$+\ \alpha_3\ WASTED\ +\ \alpha_4\ In\ Y_T\ +\ \alpha_5 Z\ +\ \alpha_6 In\ H,$$

And the demand for housing was presented as follows:

$$In\ H\ =\ \beta_0\ +\ \beta_1 UCOWN\ +\ \beta_2 WASTED\ +\ \beta_3 In\ Y_T$$

In the housing equation above, H represents the value of owner-occupier houses, $UCOWN$ represents the measure of the opportunity cost (user cost of owner-occupied housing). This is the average of the after- tax of equity and mortgage financing. The difference between the

two equations above is that the mortgage demand equation consists of tax price terms while the housing equation does not.

Follarin and Dunsky (1998) argued that the model is suitable for those household which are not liquidity constrained. A household is liquidity constrained if their application for a mortgage/credit was declined. The paper considered the two subgroups in the sample. However, other studies have used different criteria to differentiate household in each sample. For instance, Linneman and Wachter (1989) emphasized payment to income ratio and household net worth as a measure of household liquidity constraint. Follarin and Dunsky (1998) criteria proved to be more reliable than Linneman and Wachter (1998) model because Linneman and Wachter approach tend to overstate the number of households that were liquidity constrained.

The paper was able to use 1983 and 1989 survey of consumer finance because: firstly, other studies such Jones (1993, 1994, 1995) and Scholz (1994) have used the same dataset which gave it creditability. Secondly, the dataset contains information on household assets and liabilities which is very crucial to the successful application of Follarin and Dunsky model. If such is missing, the purpose of the model may not be achieved. The survey used the family as a sampling unit. A family is defined as a group of people related by blood, marriage or adoption.

In both the samples (1983 and 1989) SCF, 4,988 homeowner's dataset was used in the paper and the observations selection criteria were net worth, after-tax income and educational level of the Household Head and spouse. The dataset was limited in its use because vital information such as locational information was not captured. This made it practically impossible to establish sensitivity of location on house prices and its demand for mortgage finance. Also, the sample was biased because the survey made special efforts to oversample the high-income household with a view to obtain better estimate of their total wealth and its distribution. Such concentration on the high-income household made it difficult to produce a national representative sample.

To understand the impact of variation in the use of mortgage debt among the variables identified from theory. Follarin and Dunsky (1997) suggest a multivariate econometric model.

Follarin and Dunsky (1998) argued that the main econometric problem of estimating the

demand for mortgage finance that a lot of households are without a mortgage and such will result in censoring of the observed amount of mortgage debt. Based on this, ordinary least square method (OLS) of estimation of the demand for mortgage finance equations will be biased. In order to resolve the econometric problems identified, a Tobit estimator was introduced. A Tobit is a maximum-likelihood estimator that can be used to take care of censoring problems to produce an unbiased estimate of the coefficients and s^2 (standard error)

The paper's research procedure was to estimate the reduce-form equation in the first version using LIMDEP Version 7.0. The second version was a combination of two equations. The mortgage demand equation including housing demand equation to form a simultaneous equation. However, a simultaneous Tobit estimator was applied to eliminate a potential bias in the estimate of the mortgage demand equation with the Tobit estimator. A significant importance of this procedure is that it enables an explicit test to determine whether the housing demand is exogenous and thus provide asymptotically efficient estimates of the standard errors.

The paper presents the estimates of the mortgage demand equation in various estimators, model specification and subsample which was used as a pointer to show the robustness of the key results.

Four models were specified, and the results were presented in four columns.

The first model: $$In\ MD = \alpha_0 + \beta_{i=1........n} + \varepsilon$$

The Second model: $$LTV_{BOOK\ VALUE} = \alpha_0 + \beta_{i=1........n} + \varepsilon$$

The third model: $$LTV_{MARKET\ VALUE} = \alpha_0 + \beta_{i=1........n} + \varepsilon$$

The fourth model: $$MD = \alpha_0 + \beta_{i=1........n} + \varepsilon$$

$$HOUSE = \alpha_0 + \beta_{i=1........n} + \varepsilon$$

From the model above, $In\ MD$ represent the log of mortgage debt, $LTV_{BOOK\ VALUE}$ stands for loan to value at market value. This is obtained by dividing outstanding mortgage balance by the current value of the household's property. $LTV_{MARKET\ VALUE}$ stand for loan to value at market value. This is the present value of outstanding on the mortgage payment at the market rate. The fourth model is a simultaneous equation of the mortgage debt and house demand

equation.

Also, $\beta_{i=1........n}$ stand for a vector of independent variables in the various equations, such as: Equity (Mortgage Cost), Wasted deduction, Log of after-tax income, Log of net worth, Log of current home value, Years of residence, Age of household head and its square, Years of Education and its square of the head of the household, Years of Education (spouse) and its square, marital status, number of dependent children, Employment status and also the sector of employment either professional capacity or civil service, log of county median household income, log of county medium home value, log of county number of households.

The results of 1983 SCF revealed the all the variables identified have all the expected signs and their significant. The first model consisted a reduced form equation where the log of mortgage finance was the dependent variable. The results of the Tobit model have the expected. The following results were obtained, the coefficient of equity, wasted deduction, log of after-tax income, age of household head, years of education household head and their spouses, number of dependent children, Employment status whether working in Professional or civil service sector, county medium household income, county medium home value, number of household were positive. This simply implies the higher the coefficient of these variables, the higher the demand for mortgage finance. However, the years of residence coefficient was negative and significant. This implies an inverse relationship exist between years of residency and demand for mortgage finance. The more a household resident in a country, the less likely mortgage finance will be demanded to purchase property in the county.

The results above were not significantly different when loan to valve at book value and loan to value at market value were used as dependent values.

The fourth model used the simultaneous Tobit estimator to investigate the relationship between the log of mortgage finance and log of house value, net worth and an instrumental value for the net worth. In this model, the results revealed that the estimate coefficients of the following variables are positive and significant. They are equity, log of after-tax income, log of current home value, age of the household. This means that an increase in these variables will lead to an increase in the demand for mortgage finance.

The coefficient of the elasticity of demand regarding the after-tax income revealed a positive and significant relationship. However, a mixed result exists for the income groups. A negative

position exists for the high-income group and a positive relationship exist for the low-income group. In addition to this, household net worth showed a negative relationship with the demand for mortgage finance. In the two cases, it can be deduced that there is possibility of liquidity constraints in the demand for mortgage finance.

The results of 1989 SCF revealed the same consistent pattern with the 1983 SCF. However, the elasticity of demand with respect to income group suggest that the estimates are modestly larger for the high-income group compared to household in the lower income bracket. Also, in respect of elasticity of demand to after tax income, it was not significant in the full sample of 1989 SCF but it was significant in 1983. The elasticity of demand in respect of income classification revealed a positive and significant for constrained household and to those at the bottom of the income class for 1983.

The conclusion, the model discussed above may not be explored due limited data availability. Household data on assets and liabilities on the Nigeria Mortgage Market are not in existence for use.

2.1.3 Ling and McGill (1998) demand for mortgage finance Model.

Ling and McGill (1998) piece of work investigated the impact of household consumption, periodic income, non-housing wealth, household income tax position, expected mobility and other micro-level characteristic that influence household risk preferences and life cycle effects on demand for mortgage finance.

Theoretically, Ling and McGill (1998) paper built upon the studies like Jones (1994 and 1995) and Brueckner (1994). These studies argued from the household utility maximization paradigm which leads to sets of demand equations for consumption and investment goods, includes housing and mortgage finance and such framework that can be simultaneously estimated considering the life cycle perspective. This is particularly important because most demand for mortgage finance model did not consider the life cycle perspective in their studies.

There is an argument that states that what determine the optimal demand for mortgage finance is dependent on the relationship that exist between after-tax cost of mortgage debt, r_m and the after-tax interest on non-housing assets, r. Using the paradigm of utility maximization, for a household to maximize its utility on housing consumption, that is for the

household to consume maximum mortgage (optimal loan to house value) v, $v^* = 1$, then r_m < r , that means that a rational household should consume the maximum loan to house value when the cost of mortgage finance is less than after tax interest on non-housing asset. That means it is cheap to mortgage finance compared to equity. However, $v^* = 0$, if $r_m > r$. The household will not demand for mortgage finance when cost of mortgage debt is more than equity. This simply means more expensive to finance the purchase of a property using mortgage finance.

Although, for a debt minimizing household, $v = 0$. This household will not finance the purchase of their property with mortgage or any type of finance whether short or long term. However, such household are constrained by household wealth endowment or intergenerational transfers. Intergenerational transfer is wealth passed down from parents to their offspring. Modigliani (1963), Cox and Jappelli (1990, pp. 445-454) argued that individual with intergenerational transfers have the purchasing power and the ability to meet up with their desired consumption levels compared to others without. On the other hand, a debt maximizing household will demand for the optimal mortgage finance, $v = 1$, not constrained by cost of mortgage finance. But those households in this category are constrained by income criteria used to access the affordability of the debt.

Empirically, Ling and McGill (1998) built on the models previously used in the studies of Ioannides (1989). Jones (1993, 1994, 1995), Follarin and Dunsky (1997) Cho et al, (1996) and Hendershott et al, (1997). The studies established that apart from the relative cost of mortgage debt and housing equity, there are other important determinants of the demand for mortgage finance. They argued that a suitable model should include household characteristics that encompasses household leverage choice.

There is an important assumption which is demand for mortgage finance is highly interconnected with the demand for housing. Apparently, there will be no demand for mortgage finance without a demand for housing. A positive relationship does exist.

Jones (1995) argued that demand for mortgage debt is increased by household refinancing their homes, home improvements and some getting a second mortgage. He argued that a sizable portion of the household borrowing on home equity is done in order to free up available resources for consumption of non-housing assets.

Hendershott et al, (1997) submitted that household that could not meet up with the mortgage requirements of their desired house will purchase a property based on the value of the house they can afford. It can be deduced that house value is an important determinant to consider when considering a property. Ling and McGill (1998 p. 395) argued that a house value is a choice variable not a parameter and they emphasized that considering including house value in the mortgage demand equation estimation such should be carried out in a simultaneous structure.

Apart for house value discussed above, the demand for mortgage finance is also constrained by household level of income. Household income is what they receive in payment for work done. This is used to measure the affordability capacity of the household. A high income may not be constraint for rich households but not the same for the low-income households. This will be a peculiar problem in less developing and emerging economies where more than 50% of the population survive on less than two dollars a day.

Studies of Ioannides (1989), Linneman and Watcher (1989) emphasized that the amount the household receives in income regularly has positively influence the household demand for mortgage, thus following the traditional consumption theory as postulated by Adam Smith. However, Follarin and Dunsky (1997) argued that if the society is segmented into high- and low-income groups, a generalized positive relationship between household income and demand for mortgage finance may not apply. They emphasized that a positive relationship exists between demand for mortgages and household income for low income group who are likely to be constrained income. On the other hand, a negative relationship exists for high income group. In contrast to the nonlinear result from Follarin and Dunsky (1997), Cho el at (1997) established a negative relationship between household leverage rate and their income level.

Argument emerged that non-housing wealth could be a substitute for demand for mortgage finance. Ling and McGill (1998) emphasized that as the household non-housing wealth increases, the demand for mortgage finance should reduce, all things being the same. However, most household does not fall into this category. Buying a property is a big investment which may not be brought from the accumulated non-housing wealth. Jones (1995) paper have established that household increase their demand for mortgage finance (excess demand) in order to increase the non-housing consumption. Thus, showing that there is a

positive relationship between non-housing wealth and demand for mortgage finance.

Several household characteristics have been identified to influence the demand for mortgage finance. There are: age, marital status and the number of children etc. These household characteristics have been included in empirical specification of mortgage demand equations to understand how variations in these household characteristics could influence the household leverage decision.

Ling and McGill (1998) research model specification of household mortgage decision is an interrelationship between the amount of owner-occupied housing to be consumed and the proportion of the house value to be finance with debt and not equity. As argued above, household demand for mortgage finance is a function of predetermined factors ranging from amount of housing consumed, household income and built-up non-housing wealth, the characteristics of the tax system relating to housing, which is how the tax system treatment could impact on the household leverage decision.

A simultaneous equation specification was controlled for the household leverage decision and housing quantity decision (Ling and McGill, 1998). And as a result, the following equations were postulated, and the relationship were set forth as:

$$H_i = \gamma_1 M_i^* + b_1' x_{1i} + \mu_{1i}$$

$$M_i^* = \gamma_2 H_i + b_2' x_{2i} + \mu_{2i}$$

$$M_i = \begin{cases} \frac{M_i^*}{0} & if\ M_i^* > 0, otherwise\ i = 1, 2 \dots .. N \end{cases}$$

From the three equations above, H_i represent the current market value of the property purchased by the household, M_i represent the total mortgage amount demanded by the household at a given period to finance the purchase of the property H_i at a given period and M_i^* represent the household desired mortgage amount, γ_1 and γ_2 are parameter estimates of housing level equation H_i and the mortgage demand equation M_i^*, b_1' on the other hand represents the row vector of coefficients , and x_{1i} represents the vector of variables that explains the household's housing size decision, b_2' also represent the row vector of coefficients and, x_{2i} represents the vector of variables that explains the household mortgage size decision, and thus $x_{2i} \neq x_{1i}$ which means that the vector of variables that explains the mortgage size decision and the housing size decisions are not equal. μ_{1i} represents the

random errors in the housing size decision equation and μ_{2i} is the random error in the mortgage demand equation. μ_{1i}, μ_{2i} are i.i.d. bivariate normal variables (Ling and McGill, 1998).

The research paper emphasized that the most suitable approach to empirically test the model is to adopt a simultaneous equation limited dependent variable model. Ling and McGill (1998) suggested that the following steps in their estimation, the first step is to estimate the housing size equation with a reduced form method using ordinary least squares and the mortgage demand equation with a Tobit specification. In the second step, a structural estimation of both the housing equation and mortgage demand equation should be carried out using the predicated values of the housing level equation H_i and the mortgage demand equation M_i^*.

The paper made use of micro household-level dataset from U.S Department of Commerce. The two surveys of 1985 and 1989 micro-level was analysed to determine the factors influential to the demand of mortgage finance. The household micro dataset contained comprehensive information on the geographical location, age, marital status, income type and level, tenure status, original and current home value and property tax payment. Also included are critical information for the study such as: number and amount of mortgages, mortgage interest rates and payments. The following information were removed from the surveys to make it more suitable for the paper. The information removed are: households with unoccupied homes, households in rented properties, household in the high-income category, household with zero mortgage or negative mortgage and where the household heads are above 60 years.

The variables used for the econometric analyses for the housing and mortgage finance will be briefly discussed to show the source, measurement and the expected relationship and impact on the household decision to finance their property using mortgage finance.

The first variable to be considered is the **Mortgage debt amount**. Ling and McGill (1998) argued that what should be considered is the market value of the mortgage debt. Market value of a mortgage debt is defined as the present value of the outstanding balance on the mortgage contracts. Ling and McGill (1998) argued that the market value of the mortgage debt is more appropriate in the paper because it incorporate valuation of the household prepayment and default probabilities information. Based on this private information about the household, the actual value of the mortgage can be determined. This is against the book

value of the mortgage debt. The book value of a mortgage debt is based on the household mortgage interest rate and the terms of the mortgage. With this, Ling and McGill (1998) argued that market value of a mortgage should be the best to determine more accurately the best measure of the impact of household demand for mortgage debt.

House Value. There is a dichotomy between the fair market value of a property and the actual market value. Ling and McGill (1998) argued that the fair market value of a property is based on the household's estimates. However, the household have the tendency to overstate the real worth of their property. My research disagrees with this view of fair market value because what should determine the value of a property should be the forces of demand and supply in the market. However, Ling and McGill (1998) was able to support their argument that a positive relationship should exist between the demand for mortgage finance and house value.

Earned Income. Ling and McGill (1998) defined this as the combination of all income received by the household over a period. The income includes salaries, wages, tip and commission earned by the household head and the spouse. As the household earned income increases, so should the demand for mortgage finance, all thing being equal. According to Ling and McGill (1998) a household total income can be divided into two, which are earned income and investment income. Investment income is captured as the monies or income received from previous investment outlay. Ling and McGill (1998) argued that investment income is the interest amount, dividend received, rental income, business and other income received. However, the availability of the data to execute this may be a daunting task. The impact of investment income on demand of mortgage finance depends on the expected relationship that exist. If investment income is used as a substitute for mortgage finance, then a negative relationship should exist. This simply implies that the higher the investment income to finance the purchase of a property, the less is the demand for mortgage finance. On the other hand, if the household frees up their equity and part of it is used to purchase a house that will lead to an increase in its demand for finance. Due to the possible measurement problem encountered Ling and McGill (1998) argued that investment income would not be considered as an explanatory variable in the model estimation.

Two Wage Earners. A regular household consist of two partners where one or both are earning a living. If both partners are working, such will lead to increased savings for a property. This incremental saving will have a positive relationship with the demand for mortgage finance.

Ling and McGill (1998) argued that two income earners pulling resources together and thus enable the household to obtain more mortgage than compare to a single earner and then a bigger property. In addition to this, they argued that credit risk of two income earner is better compare to situation which is just a single wage earner. Demand for mortgage finance should increase with two wage earner and thus shows a positive relationship.

Potential Wasted Interest Deduction. The variable critically examines the impact of the income tax system on the demand for mortgage finance. The data requirement for the variable is quite enormous. Ling and McGill (1998) emphasized that the following estimation issue which will prevent the empirical estimation of the variable. The estimation of a marginal income tax rate require data which may not be readily available. They emphasized that data like itemized deductions and taxable investment income may not be easy to come and which should be estimated. Another perspective which made estimating the variable in the model is very difficult is the association of the household's marginal tax rate with earned income. This is because it will be a daunting task to separate impact of earned income and marginal tax rate on demand for mortgage finance. In order to capture this effect, Ling and McGill (1998) construct a variable which used to understand the impact of the rate at which a household deducts its mortgage interest. They argued that the variable called potential wasted interest reaction can be separated from that of the household income. This variable "Wasted" is determined by the simple model, $\{WI = SD - (PNHE - PT)\}$, where WI represent the Wasted (amount of interest), SD represent household standard deductions, $PNHE$ represents the personal, nonhousing expenses, PT property taxes. Ling and McGill (1998, p 403) argued that there is an inverse relationship which exist between the amount of wasted interest and the cost of mortgage finance. It is because the larger the amount of wasted mortgage interest, the lower is the rate of tax of saving and the higher the cost of mortgage finance.

Probability of Move. Ling and McGill (1998) argued that if there are no costs involved in refinancing a property, then at any point in time the household would maintain the optimal loan to value ratio. This notwithstanding if the household would move afterword. This impact of transaction costs, whether monetary and non-monetary on the household to demand its optimal leverage rate could be much and thus could impact on its demand for mortgage finance. In order to investigate the impact of transaction costs on households financing their

desired property with debt, Ling and McGill (1998) constructed a probit model for this variable "probability of move". The ability of a household to move with two years was tested to determine the mobility and impact of transaction cost on the household leverage decision. The explanatory variables are log of total income, age of the household head and its square, family size, number of rooms and other indicators such as: marital status, Educational level, if the household is first-time home owner, races whether African-American or Hispanic and mobility with the region. In addition to the above, rural location and regional population were considered. Ling and McGill (1998) argued that if this variable is significant, that implies that transaction cost could influence the household leverage choice.

Household Characteristic Variable. Ling and McGill (1998) demand for mortgage finance model emphasized the impact of life cycle perspective and peculiar to this, are the household characteristic which could have a significant influence demand for mortgage finance. Ling and McGill (1998) model examined more variables household characteristic than any other demand for mortgage model and such variables are used to capture the unobserved household risk. Prominent among the variables are: Age of the household head, marital status, head or spouse with a University degree, race, number of children, location whether rural or metropolis etc. Ling and McGill (1998) paper argued that due to the influence of the life cycle effects on demand for mortgage finance, they provided disaggregated sample estimates based on age bands.

The econometric results for the simultaneous estimation of the house value and mortgage debt for the 1985 and 1989 surveys revealed the followings. The econometric results are reported in two forms, which are the full sample form and disaggregated form. The full sample combines all the age bands and on the other hand, the disaggregated form which was differentiated by age bands. The first age ranges are head household less than 30 years, the second age band are head household between 30 – 39 years, the third age bands are household head between 40 - 49 years and the last group are between 50 – 59 years. I can deduce that household above 60 years were not considered because such household should be planning for their retirement based on the life cycle perspective.

The house market value coefficient was as expected. A positive and highly significant results were obtained for the full sample and the age subgroup. This simply implies that the higher the consumption of housing, the more household should demand for mortgage finance. This

finding is also backed up by Follarin and Dunsky (1997) studies which obtained a positive relationship between house value and demand for mortgage finance.

A positive coefficient of earned income were obtained for the full sample and the age subgroup. This can be said that when the household circumstance changes, demand for a commodity should increase, thus demand for mortgage finance. Particularly, Ling and McGill (1998) argued that Follarin and Dunsky (1997), Cho et al (1996) obtained mixed results (both positive and negative effects) because of total after tax income was used, thus as a consequent of their inability to confound the difference between periodic income and nonhousing wealth. However, Ling and McGill (1998) was able to obtain a positive effect between marginal tax rate and the use of mortgage finance because earned income was used as a proxy for the household's marginal tax rate.

The coefficient of a household comprising of two partners earning wages revealed that they made use of more mortgage in the full sample and the age subgroup except for the under 30 age group. This is not unexpected because demand for mortgage finance for this age group may not be the utmost in their minds.

The coefficient of potential wasted interest as a percentage of house value was negative but highly significant for the full sample and the age subgroup. The result obtained showed the sensitivity of the variable to the demand for mortgage finance. That is the larger the amount of wasted mortgage interest, the lower is the rate of tax of saving and the higher the cost of mortgage finance, thus reducing the demand for mortgage finance. Ling and McGill (1998) result here further confirm the findings of Follarin and Dunsky (1997) which is if the mortgage interest deduction is reduced, demand for mortgage finance will significantly be reduced.

The probability of the household to move within 2 years across the age range shows the different level of mortgage debt, however, such could not be said of households in less than 30 years age band. Based on the coefficients of the variable, it could be suggested the explanatory power on house size and leverage decision of the household is significant. It can be deduced that to refinancing a property depends on the transaction cost and thus on the mortgage demand decisions. For the household in less than 30 years age range, from the life cycle perspective, most of them will be constrained by level of their income and considering the impact of transaction cost to refinance a property, such may discourage them from demanding a property and also demand for mortgage finance.

Ling and McGill (1998) argued that the level of mortgage finance increased with age at a decrease rate. From the life cycle perspective, as the household advances in age, the demand for mortgage finance should increase. The demand for mortgage finance should fall when the household advances in age and ready to retire. The results revealed that a positive relationship between age of the household head and demand for mortgage demand following the theoretical perspectives. However, the age subgroup revealed otherwise. The age band of less than 30 years and 50 – 59 years showed a negative relationship and significant, thus showing a household consumption of housing falls with age. The demand for housing consumption was at the highest when the households are in the 40 – 49-year age band.

From the paper, it does not show any evidence that the household marital status has any influence of their leverage decision. The full sample revealed that negative but significant relationship between marital status, but the age subgroup shows a mixed result. It was negative and significant for age bands less than 30 years and 50 -59 year and positive for 30-39 years and 40 -49 years. The results above indicated the household not married use less of mortgage finance.

The role education plays cannot be over emphasized, as this educated household is likely to have a good life standard in term of quality of life, earnings etc. In Ling and McGill (1998), it was revealed that except for less 30 years age band, College educated household generally use less of mortgage finance to finance the purchase of their property. This justifies the use of disaggregating the sample by Age.

The family size was considered, and the number of children was used to capture the effect of family size of the household to demand for mortgage finance. Theoretically, the higher the family size, the higher is the demand for mortgage finance. The coefficient of the number of children showed a positive relationship and significant except of the less than 30 years age band. This may indicate the households less than 30 years may have a smaller number of children and may not be under pressure to get bigger property to accommodate their family compared to other age bands.

The study considers the impact of race/colour on the demand for mortgage finance. It was revealed that household head from some racial origin demanded more mortgage finance than the other except for those less than 30 years in the same category. African America and Hispanic heads demand more mortgage finance to other racial group.

The impact of location on the mortgage debt revealed mixed results. The coefficient of rural location varies across the age sub-group. Ling and McGill (1998) argued that young households in the rural areas used less mortgage finance compare to other folks in the other age bands. Rural Household of 40 years and above utilized more mortgage finance compared to their urban folks. This is a common phenomenon among all the age bands.

The 1989 survey produce similar results from the above discussions. However, where the results of two surveys are different will be discussed below.

Based on the results from the coefficient of two wage earner revealed that the variable is not significant influence of the demand for mortgage finance. The variable was constantly negative in the specification. Ling and McGill (1998) argued that household with two wage earners bought smaller properties with considerably more mortgage debt.

The impact of Age of the household heads on their mortgage debt was similar for the full samples on the 1985 and 1989 surveys. However, the 1989 survey revealed that age was an important influence on the demand for mortgage finance for household under 30 years and 30 -39 years age bands as the coefficient were positive and significant. But a negative relationship and significant exist for 40 -49 years age band. The results were like Follarin and Dunsky (1997) studies which captured this with a linear specification.

In Ling and McGill (1998) paper, it revealed a robust study of the factors that can influence the demand for mortgage finance. The theoretical and empirical relationship was established by building on previous studies and was able to correct most of the econometric errors made. Thus, they came up with a most effective simultaneous equation for the house value and mortgage debt. The study emphasized the importance of disaggregated by age and used the real impact of life cycle effects.

2.3 Summary

This section has critically investigated various models used to estimate the demand for mortgage finance. Brueckner, Follarin and Dunsky and Ling and McGill models were discussed. The section review revealed the theoretical and empirical background for the models and discussion of the model. Brueckner's model emphasized the theoretical perspective but did not considered the impact of household characteristics on the demand for mortgage finance. Follarin and Dunsky model considered the impact of returns which is uncertain on the demand

for mortgage finance. However, data limitations would make the adoption of this model difficult especially in an emerging economy like Nigeria. Ling and McGill model provided a robust theoretical and empirical analysis to the demand for mortgage finance. Based on the description of the model and the available data, this research should explore Ling and McGill model for the study.

The Justification for adopting the model was discussed on page 203.

Chapter 3.0   Rationing in the Mortgage Market

This section critically examined the concept of rationing in the mortgage market and how it impacts on the household behaviour in making housing decisions. A theoretical and empirical perspective were examined to bring out the salient argument in the concept of rationing and broaden the understanding of this phenomenon. A rationed household may not have the ability to enter owner occupation and to buy their desired property. In advanced economies like the United Kingdom, United States and Canada, empirical evidence emerged that rationing existed in the mortgage market over long time period and despite the deregulation of the financial industry with encouraged competition among mortgage suppliers particularly in the United Kingdom, credit rationing still have a great influence on the households' demand for mortgage finance.

The section tends to achieve the following objectives, which are

1. To understand the concept of rationing, identify and discuss the types of rationing in literature.

2. To critically analysis the various studies that have investigated the impact of rationing on the mortgage market.

3. Identify suitable papers that can be used to test the concept on the Nigeria mortgage market.

3.1 What is Rationing?

Rationing exist when demand outstrips supply of a product and the suppliers use measures to distribute the scarce resources. It has been argued that rationing tends to eliminate unwanted waste. Human wants are insatiable and so does their demand. For the households when it comes to mortgage finance, they tend to demand more than their financial capacity and the supplier of funds (mortgage finance lenders) use various assessment criteria to determine the amount of funds the households will eventually get to purchase their desired properties.

In this instance, this research takes the supplier of funds as the financial institutions particularly the banks. Financial Institutions particularly Banks in the mortgage market use various criteria to credit rationing and control the credit lending management of the Bank and manage the risk associated with lending. Such activities have various

implication on the households. This is because Banks may not be able to identify genuine households who are determined to pay back what was borrowed. However, the inability of the bank to identify such households implies that some genuine households will be rationed out based on the risk assessment criteria set by the banks.

Credit rationing exist due to market imperfection or market failure, that is demand for mortgage finance tends not to equate supply of funds. This is because price mechanism process failed to attain equilibrium in the market. Market equilibrium exist in a perfect market when there is a price which equate the demand and supply in the mortgage market. However, since the world is not perfect, variations in the market interest rate could be a prime factor that could make demand outstrip supply. Lenders of funds needed in the mortgage market for the households may not be willing to lend when the market interest rate are very low and tend to raise the interest rate to a point when they are maximising profit. Meen (1990) argued that the profit maximisation motive is key for mortgage finance suppliers charging higher interest rate in the United Kingdom pre-deregulation era.

Many economies whether developed or emerging have experienced financial deregulation at one time or the other. It has been argued that the financial deregulation is the needed catalyst for the development of a financial market. This is because financial deregulation will bring about competition needed in the housing/mortgage finance market.

The term "Financial deregulation" is a process in which the laws governing the financial industry are changed to allow and encourage more competition. This is argued that financial deregulation would make financial Institutions to be more competitive and such will lead to efficiency in the sector. This implies that financial institutions can merge and pool their resources together which will reduce the cost of funds. The implication of that is that the cost of mortgage pricing will be cheaper and the low income households will be able to afford mortgages in the economy.

The United Kingdom experienced financial deregulation in the 1980s. This involved Building societies which were saddled with the responsibility of providing the needed funds in the mortgage market. The ownership of the Building societies are their customers and thus specialised in mortgage lending. Prior to the 1980s, the building societies were so powerful,

that they control the market. Since they compete directly with the banks, a policy change was introduced which gave members to vote to change to limited liability companies. This enable banks to buy into their business or take over and thus, the power of the cartel was neutralised.

Meen (1990) paper critically investigated the impact of financial deregulation on rationing in the mortgage market in the United Kingdom. The study revealed that the supply of funds for mortgage finance doubled after the deregulation of the financial industry and rationing ceased. Duca and Rosenthal (1991), Linnemann, et al (1997) and Ambrose et al (2002) papers examined the role of financial deregulation in the mortgage market credit rationing in the US economy. The result was not different from Meen (1990) study. It revealed that deregulation in the financial Institution will reduce the level of credit rationing. Deutsche and Tomann (1995) also find similar outcome when their study looked at the relationship between financial deregulation and the mortgage credit rationing in German.

Leece (2004, p 92) argued that prudential lending rules or mortgage underwriting criterion are prominent instruments in the mortgage credit rationing. These are used by mortgage lenders in most economies, not restricted to the advanced economies, setting limits (quantity rationing) on the amount of mortgage borrowing households can get at a point in time. The strictness of those rules varies on the application processes and the procedure among households and such determine the amount the households will get. The smaller the amount the households get compare to their actual demand, the further the households have the prospect to enter owner occupation. It is also believed that a rigged prudential lending rule could make the households stock on renting properties than buying them. Hendershott and Hu (1983), Meen (1990) papers pointed out that the effect of the distribution of income and affordability constraints are prevalent on low income households. This is because the poorer households in the economy are the most affected by the rationing constraints.

The discussion on mortgage credit rationing cannot be completed without the examining the impact with the mortgage market adjustment. The movement in mortgage rates and prices is significant to the movement of the demand for mortgage finance and the supply of funds. Credit rationing and its instruments could be used as a mechanism to disrupt the market from attaining equilibrium. For instance, if mortgage lenders impose strict restriction such high mortgage rate on the potential mortgage borrowers, the impact of this on the market is that suppliers will be willing to lend more. However, the borrowers will demand more at lower

mortgage rate. Imbalances in the mortgage market are harsh consequence of mortgage credit rationing. More detail will be discussed when examining the types of credit rationing.

The adjustments in the mortgage market show the types of rationing that is prevalent. For instance, a dynamic rationing exists when there is an upward adjustment of the mortgage rate (high interest rate) not in the short run. However, this impact on its long-run equilibrium value. Equilibrium rationing on the other hand is a situation in which the lenders encounter asymmetric information where the necessary information which could have assisted in their decision making process is hidden from them and based on this, a general credit assessment procedures are implemented which could lead to genuine households being rationed in the mortgage market. However, deregulation of the financial market has been suggested as a solution to equilibrium rationing where more players are allowed into the business of mortgage lending. However, Leece (2004 p 93), Meen (1990) argued that equilibrium rationing can continue even after the so-called deregulation of the financial market. A good example in the UK and US in the 1970s.

Based on the discussion above, this section primary main is to investigate the circumstance under which credit rationing are prevalence in the mortgage market and the relevance to the discussion of the mortgage demand. This discussion should raise questions on the issue of mortgage pricing and mortgage market adjustment.

3.2   Types of Credit Rationing in the Mortgage Market

Under the section, the types of credit rationing will be discussed. Rationing occur when the demand for finance is more than its supply. Mortgage market rationing have been defined in terms of non-price characteristics in a mortgage contract, an adjustment in those non-price characteristics could intensify the existence of rationing in the mortgage market. Kent (1987) emphasized that loan to value ratio can be used to allocate credit when the mortgage market is experiencing disequilibrium. Nellis and Thom (1983) examined the demand for mortgage finance in the United Kingdom. A critical review of rationing behaviour of the market of the demand for mortgage from 1969 to 1980. The argument was that rationing in the mortgage market is intensified by the adjustment of the non-price terms to allocate scarce funds for house purchase. For instance, mortgage interest rate, down payment ratio, loan to income ratio and the maturity period. Nellis and Thom (1983) believed that in a competitive mortgage market, interest rate should be used to adjust to the market but the possibility to clear the

market in a rationed market may be impossible. Holmes (1993) emphasized that the adjustment of the non-price terms like loan to value or loan to income will correct the market. He argued that Holmes (1993) observed that adjustment in the mortgage market is more sensitive to variation of loan to value ratio than variation in real mortgage rate.

The following are the three identified causes of Credit rationing.

    A) Dynamic Rationing

    B) Equilibrium Rationing

    C) Disequilibrium Rationing

Dynamic rationing is a situation in the mortgage market when the adjustments in the market is slow which create a situation of excess demand. Such excess demand continues in the market until the long-run equilibrium mortgage interest rate is attainable. Leece (2004) argued that the rate of the adjustments depends on the variations of interest rate associated with the costs of price changes to imperfection in the market structures. In addition to this, are the theorises of asymmetric information and adverse selection. The impact of the asymmetric information and adverse selection on the mortgage market will slow the adjustment processes and thus the attainment of equilibrium in the mortgage market in the long run.

Disequilibrium rationing in the mortgage market exist when the interest rate ruling in the market is maintained at the current level as a result of market structure imperfection. Such imperfection could be the result of cartel activities such as the building society which determines the interest rate, or due to government regulations such as financial deregulation or usury laws. For instance, the same impact will be observed if the deposit rate is ceiled when used to finance mortgage loan. This is prominent in the United States. Leece (2004 p 94) argued that adjustment of non-price terms such as loan to value ratio or mortgage maturity, however, may not be sufficient to bring out immediate equilibrium in the mortgage market. He argued that the disequilibrium in the mortgage market will intensify the use of a queuing system for the household that want to get a mortgage. In addition to this, another criterion is for the household to maintain a saving record with the lenders to facilitate the ease of them getting a mortgage.

Equilibrium rationing exist in the mortgage market where the non-price loan terms such loan to value, mortgage maturity etc and the interest rate are adjusted which resulted in attaining a new market equilibrium regime. Attaining equilibrium does not imply that rationing does not exist at all. For instance, a situation where the lenders are exposed to default risk, asymmetric information associated with the risk and the cost of the default where it is covered by Insurance, then the lenders can still ration households which don't meet up with the set criteria.

3.3 Theoretical Perspective of Credit Rationing

In order to understand the concept of rationing, a robust discussion and understanding of the theoretical perspective is very important to this study. The various model used in rationing and the relevance to this research will be outlined. The discussion will begin with:

Disequilibrium rationing

Disequilibrium rationing was prominent in the United Kingdom mortgage market in the 1970 to early period in the 1980s. Before the financial deregulation of the 1980, the UK mortgage finance was directly under the control of the building societies. The interest rate and loan to value ratios are under their mutual control. This led to disequilibrium in the market.

In the United States, however, the existence of disequilibrium rationing is very different to the UK situation. The studies of Meltzer (1974), Hendershott (1981), Jaffee and Rosen (1979) affirm this. Kent (1987) paper identified that 1966, 1969 to 1970 and 1974 to 1975 are periods when disequilibrium rationing was prominent in the US economy. The study identified the following factors as the main determinants of disequilibrium rationing which are usury laws operating in some states, passbook accounts regulation, and upper limits on mortgage interest rate set by Federal Housing Association. Usury laws are regulations set by the Government specifying the total amount of interest the lenders can charge on a loan. These regulations are targeted to prevent charging of excessively high rates on loan and this is done by setting a cap on the maximum interest rate that can be charged. This process is a deliberate act by the government to protect the interest of the common households in the economy.

Kent (1980) paper critically investigated the impact of credit rationing in the United States where the lenders have greater control on the ruling interest rate (imperfect competition). The market failed to attain equilibrium due to rising cost of mortgages financed through the

retail deposit resulting from increased lending. In the case of a fixed rate mortgages, an increase in the mortgage interest rate will surely increase the depositors' interest rate. The increase in interest rate though have the implication on the new household entering owner occupation. As the new household may be trapped at the poverty level if their current income cannot meet their consumption pattern and thus equilibrium unattainable. Due to the different degree of elasticities of the supply of funds and the mortgage finance demand, lending stops and such is a situation of temporary disequilibrium rationing as a result of imperfect competition in the mortgage market. However, the circumstances were somehow different in the United Kingdom, as building societies operate a cartel like structure which gave them the privilege to set the ruling interest rate in the market. The building society depends on the retail deposits as well, however, the credit rationing was prominent due to the activities of the cartel that prevented others from the market by keeping the interest rate very high.

Based on the above, discussion, a critical view of the excess demand and disequilibrium credit rationing situations needed robust system which can allocate the needed credit efficiently to the household through improved access to mortgages which can be done by adopting a mortgage queuing system or relaxing the conditions requirements to be met by those households will to borrow the needed funds to finance their desired properties.

Muellbauer and Murphy (1997) emphasized that maximum loan to income ratio could put the household into a situation where changes in the real interest rates will affect household demand for housing and subsequently mortgage finance. However, changes in nominal interest rate have the implication of easing or tighten the ease of access to mortgages. It can be concluded that to capture the impact of interest rate on mortgage credit rationing in mortgage demand equation, nominal interest rate has a significant influence compared to the real interest rate.

It has argued that credit rationing could raise the user cost of owner occupation and consequently reduce demand for housing and then demand for mortgage finance. Dougherty and Van Order argued that where the household is constrained on the amount of loan they can get, then the interest rate element in the user cost equation can simply be described as the weighted average of the mortgage interest rate and the opportunity cost of equity in the property. This implies that the opportunity cost of equity in the property is the forgone rate of return which the household could have earn if such is invested elsewhere. This reflect the

marginal cost of mortgage finance. However, the impact of marginal cost of mortgage finance does not influence what amount of finance the household will choose. Thus, implies that mortgage lenders may not be able to reduce the household demand for mortgage finance.

Ortalo-Magne and Rady (1999, 2002) paper theoretically investigated how less stringent regime conditions change the household desired to demand mortgage finance especially the first-time buyers. It was observed that relaxing loan to value ratio after the financial deregulation lead to increases in house prices in the UK economy. The papers critically explained that there was an increase in the household borrowing after the financial deregulation era and then, the fall and consequently led to the variation in housing transaction and its prices.

Meen (1986, 1990) argued that financial deregulation should significantly reduce credit rationing particularly in an advanced economy like the UK. The papers critically investigated the shift of regime from a period rationing was prominent and after financial deregulation when rationing was reduced to the lowest or non-existent. It was observed that the post 1980 era rationing cease to exist in the UK and the period was marked by excess supply of mortgage funds. Meen concluded that the relaxation of the lending conditions and the annual constant growth rate of house prices led to the increase in the household demand for mortgage finance and thus creating excess demand and rationing of mortgage finance returned.

From the above, it can be deduced that financial deregulation, relaxation of lending criteria will create more opportunity for many households that are denied the opportunity of obtaining a mortgage to get one. However, there is no study in literature that have critically investigated this in the Nigerian context and how it impacts on the Nigerian households to get the needed finance to purchase their desired property.

There is no evidence of such in an emerging economy like Nigeria. This is the gap this research is trying to fill.

3.4   Market Adjustment and Dynamic Rationing

The concept of dynamic rationing can be described as situation in which mortgage interest rate is slow in adjusting to the mortgage market long run equilibrium position. A lot of causal factors have been identified; they will be discussed in due course. Leece (2004, p 97), Heffernan (1997) argued that lagged adjustments could occur from the menu costs, convex

cost function and imperfect competition. Menu costs are cost incurred when there is a change in prices. The second causal factor identified is tacit collusion and second-guessing/speculation among the mortgage lenders who will make the market interest rate move first. These activities have the capacity to make the market slowdown in the adjustment of interest rate in the long run mortgage equilibrium. The third causal factor identified in Leece (2004, p 97), Brueckner and Arvan (1986) has the likelihood of risk sharing that exist between the household that wants to borrow and the mortgage lender which will result in the slow adjustment when there is an interest rate change.

A lot of research papers have confirmed the stickiness of mortgage interest rates. Allen et al (1999) argued about the vital role the mortgage interest rates play in the mortgage market adjustment and the integration role it plays with the capital market interest rates and the deregulation of the financial markets cannot be underrated. They emphasized that mortgage rate over the period of study show stickiness regarding the adjustment to changes in changes in capital market rates. The study identified the following conclusions. The first findings were that the introduction of financial deregulation transformed the relationship between the mortgage rates and riskless interest rate. This finding is confirmed in Goebel and Ma (1993) study. Secondly, mortgage rates integrated with the risky rates before deregulation. It worth to note that mortgage rates do not adjust downwards as quickly as the mortgage rates adjust upwards.

Heffernan (2002) paper examined the historical perspective of the introduction of financial reforms in the UK economy and its experienced sluggishness of mortgage interest rate as an equilibrating determinant. He emphasized that the introduction of financial deregulation encouraged competition but does not eliminate credit rationing in the mortgage market.

Securitisation have been argued to have a significant impact on dynamic credit rationing in an economy. In order to give a uniform feature of mortgages with the main aim of making them into mortgage-backed securities such could lead to dynamic rationing. It is obvious that the speed of the adjustment of the mortgage interest rate to exogenous shocks could be the result of securitisation. Mortgage lenders who depend on the capital market/secondary market funds will be left with very little option to pass the interest rate to the security holders in this instance.

Apart of the increase in securitisation discussed above, other causal factors that will lead to quicker rates of interest and market adjustment in the mortgage markets. The growth in the sub-prime lending market. Sub-prime lending in the mortgage market is the process of extending credit to households who have been rejected in the credit market, thus resulting from weakened credit histories. And in addition, those households based on their risk assessment criteria, may not be able to maintain monthly repayments which may be due to lack of regular income inflow, divorce and medical emergencies. Subprime credits are characterised with higher interest rates, poor or no quality collateral and other very stringent conditions for those interested in the product.

Van Order (2000) argued that the encouragement of securitisation of sub-prime loans on the sub-prime market was due to the improvement on the observed default risk, and the efficient pricing of the debt to replicate its additional risk. It was emphasized that sub-prime lending in the mortgage market lead to market efficiency by making available the needed finance for household that were previously rationed.

A lot of studies have argued that the growth of securitization in any economy have the capacity to lead to market efficiency and impact on the speed of mortgage market adjustment.

Pais (2002) paper critically investigated the role of securitization on the UK mortgage rate. It revealed that interest rates of mortgage lenders who opt for securitisation in term of adjustment tends to be faster to changes in the market compared to those that does not. In this instance in the UK, dynamic rationing should not be prevalent. Roth (1988) findings corroborated Pais (2002) which emphasized that securitization has the tendency to increase the volatility of mortgage interest rate and speed of adjustment of interest rate. This is because securitization of mortgages should eventually come at a lower cost to the household borrower when compared with the traditional bank lending.

Leece (2004, p 97) emphasized that lenders that deal in the secondary market finances are compiled to pass the interest rate changes to the security holders. This may affect the volatility of the mortgage rate and thus may limit the ability of risk sharing with the household which may push the mortgage rate upwards. The bottom line is that it may lead to less dynamic credit rationing.

Stiglitz and Weiss (1981) study emphasized that the resulting adverse selection may be the reluctance of mortgage lenders to raise interest rate and as a result of the relatively low mortgage interest rate may be very attractive to high risk borrowers which could lead to high default risk. This will eventually ration some households and thus dynamic rationing. The theoretical view of Stiglitz and Weiss was that the first mortgage lender to raise the interest rate would have observed that household who does not have the intention to default will leave first and with a view to have a cheaper cost elsewhere. The paper found out that financial institution particularly banks may be hesitant to increase mortgage interest rate but maintain a steady low interest rate which have the tendency to create excess demand for mortgage finance and bank maintain a stringent lending criterion which will create credit rationing.

Allen et al (1999) paper argued about the impact of the mortgage lenders unwillingness to lower mortgage interest rate using the US economy as a case study. They emphasized that in the mortgage market, low interest rate charged by mortgage lenders will increase the tenure of the mortgage debt and thus have the impact to increase the tendency of price volatility in the market. Such volatility will prolong the speed of the adjustment in the market. They concluded that the increase in the volatility in the market will put pressure on the mortgage lenders to demand a high-risk premium which destruct the market adjustment process and it will decline the ruling rates in the capital market rates.

The theoretical perspective of Stein (1995), Lamont and Stein (1999), Ortalo-Magne and Rady, (1998, 1999, 2006, 2006) emphasized that the impact of down payment constraint on credit rationing and the speed of adjustment in the mortgage market. However, the papers focussed on the consequence of down payment constraint resulting from liquidity constraints of the household rather than on its causes. The contribution of these theoretical perspective is that the implication of binding liquidity constraints on the housing market and the mortgage market adjustment process were identified. The models are significant in the predicting housing bubbles and measure the reaction of shocks especially exogenous shocks which have the capacity to influence the speed of adjustment of the market. For instance, changes in the household level income. It was evidenced that credit constraints are intensified if the household income are very low and on the housing market. Leece (2004 p 98) argued that the

initial liquidity constraint could lead to cycles in which the mortgage market will be significantly affected. The impact of this will result in an out of equilibrium position in the market and creating excess demand in the mortgage credit market. Leece argued that as the house prices increase, and household meet the down payment requirement then credit rationing should be treated as an endogenous to the model.

3.5 Asymmetric Information and equilibrium credit market rationing

Information asymmetry

This section critically examined the role of asymmetric information on the equilibrium credit rationing.

Information asymmetry is simply a situation in which a party is better informed than the other and based on that information important decisions are made. This is having an advantage over the others due to information imbalance which can lead to undue advantage. For instance, examples of such are: adverse selection, moral hazard and information monopoly.

In the mortgage market, a good example of information asymmetry exists between the mortgage lenders and the household borrowers. In this instance, the lenders may not be able to determine the default propensity of the households when they are applying for a mortgage finance. Brueckner (2000) paper examined the likelihood of default as relation to psychic cost of default which the lender may not observed as at the time the households are applying for the mortgage loan. Based on this, it is suggested that different mortgage contract should be provided by the mortgage lender so that households can make choices based on their risk assessment. Leece (2004 p 98) argued that under certain conditions, different mortgage contracts and the existence of information asymmetry may result in separating equilibrium in the mortgage market. Consequently, one of the contracts will lead to rationing of mortgage credit and self-selection of contract by households. Rationing in the mortgage market will arise due to imbalance of information between the mortgage lender and the households.

The fundamental question is, does the lender design one or different mortgage contract with the aim of attracting different risk categories of borrower to self-select from the available contract and thus form separating equilibrium.

Theoretical models on asymmetric information to mortgage markets such as Brueckner (1994, 2000); Harrison et al (2004); Ben Shahar and Feldman (2003) were critically analysed to understand the theoretical perspective of the impact of asymmetric information on mortgage market. The main contribution of the research papers is the identification of the possibility of different mortgage contracts, highlighting different risk categories of borrowers that show their profits of the lending to them and their likelihood default risk. It was the opinion of Dunn and Spatt (1985); Chari and Jagannathan (1989) that household ability to make a mortgage choice can be critically viewed by signalling their mobility ability and the propensity to default on their mortgage contract was emphasized by Brueckner (1994, 2000) Harrison et al (2004); Ben Shahar and Feldman (2003).

Earlier research work which examined the applications of the mortgage market that dealt with the role of information asymmetry under credit rationing such as Jaffee and Russell (1976) was developed. The Jaffee and Russell (1976) model adopted the theoretical perspective of demand and supply for credit considering the influence of asymmetric information. There are numerous papers that have examined the impact of asymmetric information on credit rationing, however, Jaffee and Russell model form the theoretical foundation for their models. Rothschild and Stiglitz (1976) paper provided an application of the asymmetric information to the mortgage market. In term of the mortgage market behaviour and how credit rationing impact on the performance of the mortgage market, the Jaffee and Russell (1976) provided many important insights which will be discussed shortly.

3.5.1 The Jaffee and Russell (1976) Model

The significant contribution of this model was the introduction of the fundamental principles in the analysis of the credit markets and the influence of asymmetric information in the adjustment process of attaining a market equilibrium. The model is structured by considering two sets of households borrowing to finance a property in the mortgage market. The households considered are honest and dishonest borrowers. The theoretical perspective of the model was the dishonest households have the premeditated intension to default on debt payment in the second period in a two-period model. However, the mortgage lenders cannot differentiate between the honest and dishonest households applying for mortgage finance in the market. This situation could make asymmetric information arise because mortgage

lenders cannot distinguish the households that are honest and will pay their periodic mortgage obligations and those that will not.

The Jaffee and Russell model can be expressed diagrammatically as follows:
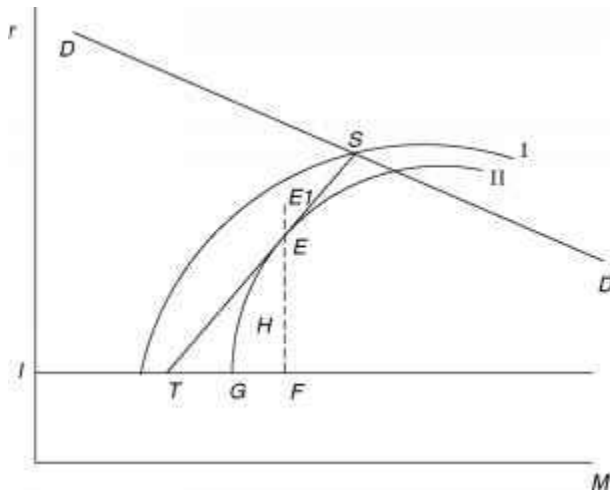
Source: Jaffee and Russell (1976) Imperfect information, uncertainty and Credit rationing.

Based on the above, the mortgage market equilibrium occurred at the point where the supply curve (TS) intercept the demand curve (DD). On the left axis represent the interest rate and the right axis is the mortgage amount. The diagram represents the various combination of interest rate and loan amount from which various loan contracts can be formed. Credit rationing in the mortgage market will occur in the mortgage market a mortgage contract from the various combination must be above the point (E) and what could be deduced from this is that supply curve is below the market equilibrium and such will create excess supply. Some household will want such mortgage contract and self-select such contract. From the mortgage lender perspective, the more the household self-select such contracts, the more the lender will make more profit. This is consequent on the fact that mortgage lender charges more fees on such contracts and the household are willing to pay. The assumption here is that a mortgage market is a perfectly competitive market where they are many buyer and seller of identical product and they are price takers. The ability of the mortgage lenders to make profit depend on the incentive received from their activities and this is referred to as the incentive compatibility constraint (Leece, 2004). From the diagram above, this is captured on the supply

curve which truncated the demand curve at market equilibrium (S) which reflect a constraint known as the zero-profit constraint. At this position, excess supply of funds is not acceptable because it will lead to negative profits and no lender will want to continue to grant loans if it is not profitable. In order to avoid losses, the lender should maintain a relatively constant cost of funds, that is from (I to T). Let assume that supply curve arises above point T, the implication of that is, an increase in the likelihood of dishonest borrowers to default when the interest rate on the loan contract increases. This is because the mortgage lender will change more for the risk taken to grant more mortgage credit. They will be no default risk at any point below the minimum cost of fund. This is because as the cost of fund become cheaper for the lenders, very minimum cost will be passed on to the household who are borrowing and no need for compensation for the lenders.

The demand curve (DD) shows trade off that exist between mortgage finance and interest rate and the demand curve was resultant from the various set of iso utility curves. From the diagram, Iso utility curves I and II was used to derive the demand curve at the point of intersection of the iso utility curve with the demand curve. From these two scenarios, this can be deduced. When the interest rate is lower, the household will demand for higher mortgage loans and on the other hand, high interest rate will depress the household demand for mortgage finance. In this instance, it have been established that market equilibrium represent a favourable contract, however, where rationing exist, a favourable rationing contract should be over the market equilibrium and thus lie on the highest utility curve, higher than the S. E. This position E will attract honest borrowers due to the lower mortgage interest rate experience as a result of their low likelihood of default risk. In this circumstance, credit rationing will occur as a consequent of excess demand from the household who demand more for this low risk credit.

A critical look at contract like E1, this lie above a point higher than E, this contract is more profitable for the mortgage lenders. However, due to competitive nature of the market, the mortgage lender will engage in a price war which will force back the contract and pricing to point E. It can be deduced that competition in the mortgage market will result in credit rationing under imperfect information. However, if this contract is second to none in the market, such will be described as a pooling equilibrium.

Another important contribution of the Jaffee and Russell (1976) model was the introduction of the possibility of two different contract in the mortgage market. They argued that there is a possibility of separating equilibrium in the mortgage market where one contract will be attractive to an honest household who will pay back the mortgage debt and the other contract for a dishonest household that may not pay back. A loan contract that lies on the uppermost utility curve will be attractive to the honest household interested in a mortgage contract. In this instance, contract H is the most suitable. This is because the honest household contract is characterised with lower interest rate and thus not paying exorbitant premium and charges to compensate the mortgage lenders for the associated risk for lending to the dishonest household borrowings. However, the dishonest household does find contract at E very attractive and a large mortgage loan is consumed. In term of credit rationing and market adjustment to the equilibrium, is this circumstance stable?

It was observed that no stability can be experienced with that introduction of the two contracts to different households in the mortgage market. This is a problematic situation because the shift of the honest household to contract H from contract E removes the reliability and profitability of the contract. However, the new contract H will make the market to react and cream off the more profitable household. Due to the losses incurred by the lenders on contract E will make them not to withdraw the availability of the contract. As a result, the dishonest household will have to apply for a contract H and make its unprofitable. As a consequent of the repeating the process such will lead to a collapse of the competitive process and the disruption in the market continues.

The Jaffee and Russell (1976) model shed light on the important role of information and make the impact of many non-price terms and institutional arrangements/constraints that lead to instability resulting for the dynamics of the market consequent to the introduction of two separate contracts in attain equilibrium. Jaffee and Russell argued that empirically, not only loan amount and interest rate can be used to influence the adjustments of a separating equilibrium in the mortgage market, others such as price vectors can be added to adjustment of separating equilibrium.

Jaffee and Russell (1976) model emphasized the role relationship of interest rate and loan

amount and how this impact on the household consumption of mortgage finance and its relationship with other models of demand for mortgage finance. The critical assumption of the model is based on the default behaviour of household particularly in the mortgage market. A significant theoretical contribution of this model was that dishonest household usually takes up a mortgage loan with the intention of not paying back. However, the mortgage lenders cannot specifically identify the dishonest household because both honest and dishonest household have the same utility function and demand curve. This is a result of information asymmetry and this model revealed how information asymmetry can lead to credit rationing.

3.5.2   Rothschild and Stiglitz (1976) model

This model introduced a different but dynamic theoretical perspective to how asymmetric information can impact on the final outcomes in a market. This model was grounded on the application to the insurance market. The model identified two types of households that could be in a market, the high and low risk households. Asymmetric information arises when there is a possibility of an accident occurring. However, in the mortgage market, it can be applied to when there is a possibility of the household defaulting on their mortgage debt. Rothschild and Stiglitz (1976) argued that households at any point in time differs in their financial and psychic costs of default which may not be revealed to the lenders when the mortgage loans are being granted. This revealed that as a result of information asymmetry, which make the lender to have different contracts to different household based on their risk assessment criteria and consequently leading to the emergence of separating equilibrium with credit rationing.

Based on the Rothschild and Stiglitz (1976) model, a significant contribution is that having a pooling equilibrium that is a single contract ruling in the Insurance market cannot be possible. This is because the provider will be better off if it pays another insurer to supply a more favourable contract which it is not willing to take. Based on the model, equilibrium will be achievable if high and low risk household were able to have contracts that appeals to them. At this point, it is given that there is no possibility of a new profitable contract introduced.

Based on the above, we can argue that various combination of loan amount and interest rate should lead to an equilibrium in the mortgage market. That is various contracts based on the

household risk rating. As a result of the various combination, we should have a separating equilibrium in the market.

Dunn and Spatt (1985); Chari and Jagannathan (1989); Yang (1992) papers have investigated the separating equilibrium where households in the mortgage market have enjoyed various combination of loan amount and interest rate that appealed to them.

Brueckner (1994, 2000) papers provided a rigorous investigation of the impact/role of interest rate and mortgage amount in the choice of the household to enter home occupation. The first paper critically investigated the general idea of the relationship of loan amount and interest rate which other model on demand for mortgage finance have dealt with. However, the second argument was to empirically investigate the relationship between the loan balance and interest rate. This paper examination what the household behaviour will be when there are changes in interest rate on the loan balance which reveals the affordability issues of the household over the period of the mortgage finance. This model was considered consequent on the mathematical unsteadiness of using size of the loan and interest rate in the modelling.

The question to ask is what the reaction of the mortgage lenders and the households will be where there is full information. Full Information in the mortgage market exist when there is not hidden from the full knowledge of the mortgage lender. The reaction of the market will be that the mortgage lender will be able to provide mortgage finance to those that can afford it and based on their credit risk rating, households will get mortgage loan that they deserve. Based on the existence of full information analysis in the mortgage market, households with high default cost would be given a mortgage contract with bigger loans and lower interest rate. This reflects the households with very low probability of defaulting on the mortgage debt. On the other hand, households with high default risk which implies that with poor credit history and risk averse and with a high probability of default would be given smaller mortgage loans with an unavoidable interest rate. High interest rate is used as a tool to discourage them from obtain the mortgage loan.

It can be deduced that with full information, affordability potential of the households can be easily determined and those households that cannot afford the mortgage loan are completely rationed.

Due to market imperfection where there is no full information, rationing will continue to exist, and vulnerable groups of households will be rationed and may not be able to have their desired properties. Brueckner (2000) argued that fair price of the mortgage contract should be offered to the safe households with low risk of default compared to risky household who has a very high probability of default. This is because pooling every household together will lead to unstable adjustment which will make the mortgage lenders provide mortgage contact which will ration out the safe household.

In addition, Brueckner (2000) emphasized that the ability of the low risk household to borrow more under full information is a signal of their credit worthiness.

Harrison et al (2004) paper presented a theoretical and empirical perspective to the discussion of separating equilibrium and credit rationing in the mortgage market. The model present contradict the conventional wisdom that risky household borrow more. Another critical contribution of the model is that they emphasized on the impact of income variability on the household demand for mortgage debt. This take the approach of mortgage default and the affordability criteria to perspective. Based on the conventional knowledge applicable in the mortgage market, there is a correlation of loan-to-value ratios and mortgage default ratio and thus such relationship is positive. This means that as the LTV is high then the mortgage default ratio should be low and vice versa. The model presented a theoretical perspective which demonstrates the correlation that exist between LTV ratios and mortgage default risk depends on the default costs of the borrower. Explicitly, Harrison et al (2004) model emphasized that when the default costs are high, this will result in a separating equilibrium which will enable the risky households to self-select contract with lower LTV loan which will consequently impact of their default cost by reducing the likelihood of them facing a costly default. On the other hand, safe household based on their signalling of their credit worthiness will self-select into higher LTV loans. This process will result in adverse selection thus which gives rise to the possibility of more cases of default for the lower LTV loans. The findings based on a sample 859 household mortgage loans revealed that the predication of the model is consistent with the argument of the model.

What can be deduced from the above discussions is that if less risky households borrow more,

then invariably the origin of credit rationing will cease to exist? Based on this paradigm, in any mortgage market were the default cost is relatively high, it is more likely for that economy to experience less impact of rationing. However, the application of this theoretical perspective to an emerging economy like Nigeria will be welcome development and a significant contribution to knowledge.

Based on the above model which dwelled on the income variability and how it impacts on household decision on the loan size/interest rate space, a critical question that comes to mind is the role and use of credit records and credit rating as a tool to signal the household credit worthiness and to determine the probability to default on the mortgage loan granted.

It is believed that credit rating should be a good indicator to determine how viable the household is but Ben-Shahar and Feldman (2003) argued that not in all cases the credit rating will signal the borrowers. They argued that what credit rating does is to segment the households and as a result the rating can be used to offer different menu of mortgage contract which will screen out high risk household. This is because high risk households will surely have a poor credit rating. The theoretical perspective of this paper is that various level of credit score will identify safe households which will offer them with the appropriate loan amount and interest rate with low risk premium. A significant contribution of this paper is that it demonstrates the signalling and screening of households which is an efficient process to determine the credit worthiness of the households, not rate of default on their mortgage loans. The study revealed that based on the better credit rating of the safe household compared with the risky one, safe household however, chooses a contract with shorter maturities and pay lower premium while the risky household will get a contract with longer maturities and pay high premium.

Ben-shahar and Feldman (2003) findings tends to agree with the other model discussed above that it is only risky households that attain their full information equilibrium contract. However, due to the impact of credit scores, others could obtain mortgage contracts that are close to their full information equilibrium. This does not mean the rationing does not exist, it does however, and the severity of the rationing on households is greatly reduced if the households can signal their credit worthiness through credit rating.

Leece (2004, p 109) argued that automatic underwriting and credit scoring mechanism have a direct impact on the securitisation on the granted mortgage credit. In addition to this, mortgage lenders have to requisite local knowledge and information about the local market which will aid in their decision making and thus assist mortgage securitisors. He emphasized that increased information/ advanced credit scoring information have been a deterrent for the securitisors demanding additional securities or raising the bar for the mortgages. With this process in place due to credit scoring, this will increase the credit availability and thus have the tendencies to reduce credit rationing in the mortgage market.

3.6 Empirical Perspective of the Mortgage Credit Rationing

This section examined the empirical analysis of the mortgage credit rationing with a focus on the UK and US economies. The focus will be on the aims, methodology and the general findings in the studies.

When rationing is intensified in the mortgage market, it does have the capacity to affect the tenure choice of the household, level of the consumption of mortgage finance and life cycle planning of the household. It has been argued that financial deregulation is the solution to the menace of credit rationing (Ortalo-Magne and Rady (1998, 1999, and 2002). However, institutional structure of the housing finance has been accredited as the reason for credit rationing. Deutsch and Tomann (1995) emphasized this argument in their paper which compared two European neighbours (German and Austria) mortgage market. It was observed that risk sharing and institutional arrangements were the contributory factors which intensified mortgage credit rationing which impacted majorly on the less privileged in the countries.

The discussion of the UK mortgage market rationing began with the activities of cartel building societies where interest rate was used as an instrument to control the mortgage market which lead to mortgage queues and the use of non-price rationing mechanisms. Rationing intensified in the mortgage market resulting in excess demand and which lead to a situation in which the adjustment of the non-price terms of the mortgage contracts adjustment did not clear the

market.

In the study of credit rationing in the UK from 1972 to 1990, what was common among the studies are used of time series data and the mortgage equations used included the introduction of dummy variables to capture periodic change in the regimes and differences in the severity of credit rationing. Such studies are Nellis and Longbottom (1981), O' herlihy and Spencer (1982); Hendry and Anderson (1977). The research papers of Ostas and Zahn (1975); Wilcox (1985) identified and used proxy to determine the extent of rationing in their models. For instance, Ostas and Zahn (1975) and Wilcox (1985) used mean loan to value, Nellis and Thom (1983) study captured the impact of rationing on the loan to income ratio.

One of the major setbacks of these studies was their inability to capture the major shift in regime, particularly, important landmark which could significantly determine the policy perspective to be used. For instance, the financial deregulation that occurred in 1980. Meen (1989, 1990) build on previous studies such as Wilcox (1985), Hall and Urwin (1989) and adopted a similar methodology which is the use of direct measure to capture rationing where a structural equation incorporated both a demand and supply model. A significant contribution of the studies was the impact of rationing estimated by the difference that exist in the estimate of mortgage demand and the supply function. The findings of the studies were that mortgage rationing cease to exist after the financial deregulation. This finding was consistent with previous studies such as Wilcox (1985) and Hall and Urwin (1989).

In addition to the above, Meen papers identified the significance of nominal interest rate in the modelling of the housing/mortgage demand equations. He found out that coefficient was large and significant showing it's relevant to the equation.

Muellbauer and Murphy (1997) paper covered periods from 1957 to 1994 in the UK's economy to critically understand the changes or shifts in regimes in the UK. These period covers period of pre-financial deregulation, financial deregulation and post financial deregulation. They found out that interest rate was a fundamental determinant in the post financial deregulation era. This was because the coefficient of interest rate was large and significant during the periods. They also emphasized that household expected income growth have the tendency to

reduce the housing/mortgage demand under rationing. This will lead to increase in the consumption of non-housing consumption. They concluded that in the present of mortgage payment problem, liquidity constraints and restricted access to funds through the capital market attested to the facts that nominal cashflow is a key to the household when considering mortgage finance.

Ortalo-Magne and Rady (1998, 1999, 2002) papers critically investigated the theoretical perspective of housing demand and household behaviour in the UK's economy during the pre and post financial deregulation period. Their papers identified the important contribution of income shocks and financial deregulation on the housing boom that occurred during the period of 1982 to 1989 and subsequently the bust from 1990 to 1993. It was deduced that increased income levels resulted in the general rise in the house prices which made the rate at which young first-time buyer climb the property ladder very slow. However, comparing this to post financial deregulation period, young household can easily climb the property ladder. In conclusion when examining the regime shifts, it can be emphasized that financial liberation is instrumental to young households entering owner occupation.

Linnemann and Wachter (1989) study critically investigated the periodic shift and its impact on the ability of the household to enter owner occupation. This paper examined the pre and post financial deregulation in the United State economy and with a view to assess the impact of credit rationing during the periods. The two periods considered in this study are 1975- 1977 and 1981- 1983. The methodology adopted was to divide the sample into constrained and unconstrained borrowing households. Two binding constraints were used to segregate the sample, which are income constraint through the loan to income ratio and wealth constraint via loan to value ratio or down payment requirement. For instance, if the household did not make up any of the above criteria, that household will fall under the constrained group.

Linnemann and Wachter (1989) study used a probit model to determine the probability of owning a property and the impact of credit rationing on the demand equation. The method adopted was to estimate a separate probit models for the two periods identified and compare the estimates obtained to understand the impact of credit rationing on the household's consumption of their desired properties. Such should enable to identify the importance of innovation like adjustable rate mortgage and securitization of mortgages. For the US context,

it is important to note that the underwriting criteria for the adjustable rate mortgages were less stringent for borrowing household.

It revealed that the impact of income and other control variables such as marital status, family size and expected tenancy time fell when measure use to capture the impact of rationing was introduced into the model. The impact of rationing for the period of 1981 to 1983 is less compared to the period of 1975 to 1977 which was as a result of the securitisation processes and the introduction of adjustable rate mortgage.

Linnemann et al (1997) applied the theoretical perspective discussed above to this study and adopted the 1989 survey of consumer finances. They found out that the borrowing constraints remains to impact upon the probability of home ownership. The ability of the household to meet affordability criteria is key in their ability to obtain a mortgage, those that cannot afford one are rationed. They emphasized that household meeting up with the deposit requirement is key to the purchase of their desired property.

Recently research on the US market have focus on default cost and ways to attain equilibrium in the mortgage credit rationing. Harrison et al (2004) and Brueckner (2004) papers provided a theoretical and empirical perspective to the study of credit rationing which dealt with household behaviour and choices they make when default cost is captured. If a comparative analysis of the various papers, it can be deduced that emphasizes is on the household access to home ownership and identify the associated constraints.

More recent papers investigated the impact of credit rationing.
Albertazzi et al (2017) investigated the impact of information externalities on credit rationing of household in the mortgage market. The paper empirically determined the various strategies used by banks to ration households which involves the use of past rejection history to form a vital opinion on the current application. The research found out that past rejections reduces the probability of approval of application for mortgage finance and increase the probability of being rationed.
Niinimaki (2018) investigated the impact of the household having a collateral as a pledge of personal assets to secure lending in the mortgage market. The research finding was that

households without collateral are more likely to be rationed. Furthermore, the paper emphasized that banks can increase credit rationing by rising the collateral requirement.

Based on the discussions above, the concept of credit rationing both theoretical and empirical models have been critically investigated in the UK and US economies. However, extensive research like this have not being done for an emerging economy like Nigeria. This will be particularly interesting to adopt this concept to the Nigeria Mortgage market and to know if it will conform to the conventional wisdom.

3.7 Modelling Mortgage Demand under Credit Rationing.

In order to adopt this concept of credit rationing to the analysis of the demand for mortgage finance two important studies will be examined. The two papers are Meen (1990) and Leece (1995). The reasons for adopting these studies were: firstly, Meen studies modelled the structural changes in the UK which was introduced after financial deregulation in the mortgage market. Secondly, to identify which demand for mortgage finance determinants will be influenced by credit rationing.

The discussion on the impact of rationing on the demand for mortgage finance begins which the analysis of the structure of Meen (1990) study.

3.7.1 Meen (1990) Demand for mortgage finance with rationing

Meen (1990) study investigated the structural changes in the UK's mortgage market by examining a regime switch from period of rationing to when rationing cease to exist. The study examined the period where the building societies (mortgage providers) rationed supply for mortgage finance to the period of financial deregulation (Banks participation in the mortgage market were allowed). The paper identified various models in literatures, reconstructed the models and re-estimated them with the same dataset over the same period. Based on Meen's findings, a new model was developed which was used to investigate the impact of mortgage market rationing in the housing market.

Meen (1990) critically analysed the previous models and these models principally emphasized the role of mortgage lenders as the sole provider of mortgage finance, thus concluding that

the supply of mortgages influences the demand for funds. As at this time mortgage lender encountered excess demand and have designed various instruments for rationing. Meen studies considered all the models in addition to the various factors that affect demand for mortgages and their measure of rationing. Some of the models are as follows.

O' Herlihy and Spencer model: $(GA/PN)_t = f((GA/PN)_{t-1}, (Y/PC)_t, D(1)_t, D(2)_t)$.

Based on this model, demand for mortgage finance is influenced by real personal disposable income and the impact of rationing is captured by the dummy variables D (1) and D (2).

Mayes model: $MC_t = f(MC_{t-1}, YRA_t, RBM_t, SDD_t, LRBS_{t-1}, RRD_t, (PN/PC)_t)$

$$GA_t = f(MC_t, MC_{t-1}, MC_{t-2})$$

Mayes model looked at mortgage finance as being determined in two stages. The first stage examined mortgage commitments as a function of the decision variables such as the fixed weight distributed lag function of the commitment. The second stage examined the gross advances to be a function of fixed weight distributed lag function of mortgage commitments. From the study however rationing was captured by variations in liquidity and reserve ratios. Likewise, the demand for mortgage finance was captured by income, mortgage interest rate, and the relative house prices.

Hadjimatheou model: $NA_t = f(Y, RBM(1-TAX)_t, PN_{t-1}, (PN/PC)_{t-1}, MAR_t, NA_{t-1}, LRDEV)$

According to Hadjimatheou model demand is dependent on personal disposable income, mortgage interest rate, relative house prices, rate of change in house prices, marital status. On the other hand, supply of funds constraint is captured by liquidity ratio. However, liquidity ratio is targeted at 16%, if it falls below that percentage, rationing will be intensified to restore the percentage to 16%.

Meen (1990) re-estimated the models and the findings were that using the same dataset over the same periods produced the similar results from the published one. He identified that in each model, the level of mortgage demand is influenced by personal income and mortgage interest rate.

Meen argued that the re-estimated models were not satisfactory from the theoretical perspective, because the models provided a consistent framework for mortgage lenders

decisions made on mortgage advance and setting interest rates. Based on this, two other models were considered which are: Hendry and Anderson (1977) and Anderson and Hendry (1984) which provided the theoretical foundations for the Meen's study.

Meen (1990) adopted the Anderson and Hendry (1984) model with some modification. The changes are firstly, the mortgage demand equation is derived from a cost minimizing function, secondly, changes in the cost function enable the identification separately the mortgage demand and supply function, thus enable the measurement of the impact of rationing on the demand.

Meen (1990) argued that demand factors like income, house prices and mortgage rates have significant influence in determining the volume of mortgages and based on these an estimate for mortgage rationing can be derived. The mortgage demand was specified as:

$$\Delta M d_t = \sum_{i=0}^{m} \eta_i y_{t-1} + \sum_{t=0}^{n} \zeta_i rebm_{t-1} + \sum_{i=0}^{p} \emptyset_i pn_{t-1} + \sum_{i=0}^{q} \emptyset_i m_{t-1} + B_0$$

In order to capture the impact of rationing on the demand for mortgages in the United Kingdom, Meen identified a structural change in the financial market when the market was liberalized in 1980. Financial liberation enables banks to participate actively in the mortgage lending. The implication of this is that supply of funds for mortgages should increase and rationing tends to cease.

Meen's study used this to investigate if the rationing ceased. The study introduced a dummy variable to capture the impact of rationing on mortgage demand. For periods before 1980, that is periods before the financial liberation the dummy variable had a value of zero and after 1980, the dummy variable was one. Theoretically, it is believed that financial liberation should increase the volume of mortgages in the mortgage market. The finding of the study evidenced that during the periods before 1980 rationing in the mortgage market existed and periods after the 1981 to 1987 rationing was ceased in the UK Economy.

The significant finding of Meen (1990) to this research is the determination of the rationing when there is a structural shift in the market. In this case instance, this research will investigate if rationing ceased when there was bank recapitalization in Nigeria in 2005 or not.

Theoretically, an increase in bank capitalization should increase the supply of funds for mortgages in the mortgage market. Thus, rationing should cease to exist.

3.7.2 Leece (1995) Demand for mortgage finance model incorporating rationing

Leece (1995) studied and analysed the impact of rationing and financial deregulation on the demand for mortgage debt in the United Kingdom. The study covers periods of high real interest rate and financial deregulation in the mortgage market. The introduction of financial deregulation increased the competition among mortgage providers which made them to relax stringent rigid lending criteria in the mortgage market and thus resulted in the expansion of credit facilities, thus leading to the reduction of excess demand for mortgage finance. He argued that interest rate adjustment in the mortgage market is an important mechanism to restore the equilibrium in the market.

The study adopted a cross section approach based on data from family expenditure survey. Leece (1995) emphasized that the dataset can be used to identify the impact of demographic features, regional locations and the wealth variation on mortgage demand. In addition, he emphasized the uniqueness of the data which showed the period of the household took possession of the property which was used to analyse the impact of interest rate variation and to detect changes in the mortgage market regimes, that is to distinguish between regime of rationing and non-rationing.

The study seeks to address the impact of credit rationing on the household demand for mortgage debt by adopting a double hurdle model to estimate the mortgage demand equation. Leece (1995) adopted the double hurdle model by Cragg (1971) due to its distinctive characteristics which is "separating the determinants of the probability of desiring and obtaining a mortgage contract from the determinants of the size of the debt".

Leece (1995) argued that the option for double hurdle model allow the mortgage holder to function as both the probability of desiring a positive amount, that is when mortgage amount is zero and the probability of obtaining the desired amount, that is when mortgage amount is greater than zero. This enabled the study to investigate the impact of rationing on household behaviour in making a choice on mortgage amount.

Leece (1995) study introduced a life cycle perspective to examine the consistency of the life

cycle plan with the current demand for mortgage demand with rationing considerations.

Lecce (1995) analysed theoretical models of Artle and Varaiya (1978) and Ranney (1981). Both studies incorporated the life cycle perspective into the analysis of the mortgage market. Ranney (1981) study analysed with a "simple model the impact of an increase in the expected future price of houses on the current market- clearing price, the mortgage market and examined how housing stock are redistributed to household based on their wealth and liquidity features. Artle and Varaiya (1978) and Ranney (1981) papers argued the mortgage market rationing is pronounced as a result of down payment requirement and emphasized that household decision resulting from inter-temporal trade-offs in saving and consumption (Leece 1995).

Building on this theoretical perspective, Lecce (1995) used a two-period budget constraint which is consistent with the life cycle estimation of the household current demand. It was assumed that there is a perfect capital market and household have perfect foresight, which is household knowledge of the future outcome of their current decision.

In the first stage of the household consumption plan, household distribute the available resource equally over their life-time periods. The expected lifetime utility for any period for the consumption bundle of consumption is

$$\epsilon[U_t] = \epsilon[\sum_t (1+\gamma)^{s-t} U_s(x_s)] \quad \text{s = t ...... T.}$$

From the above, x_s represent consumption bundle at period s, $\epsilon[U_t]$ represent the discounted sum of the utility index $\epsilon[U_s]$ in any period s = t...... T, γ is the subjective rate of time preference and the expectations operator is represented by ϵ. The household lifetime utility maximization subject to lifetime wealth constraint are given as:

$$\sum_{s=t} \frac{p'_s x_s}{(1+r)^s} = (1+r_t) A_{t-1} + \sum_s \frac{y_s}{(1+r)^{s-2}} = W_t$$

From the equation, A_{t-1} was used to represent assets in period t − 1, y_s stands for income at period t, W_t represent wealth at period t, r_t stand for the rate of interest for lending and borrowing, p'_s is prices of commodity bundle x_s.

From the equation, $\sum_{s=t} \frac{p'_s x_s}{(1+r)^s}$ is the total expenditure of their lifetime, $\sum_s \frac{y_s}{(1+r)^{s-2}}$ is defined

as the addition of current income and expected present value of income (Hall 1978, p 975). The asset at period t is $(1 + r_t) A_{t-1}$. This theoretical perspective assumes that real interest rate is constant and known by the household.

Leece (1995) adopted an assumption known as the additive separability preference. This implies that preference of bundle of x_s are added separately to those in the future period. The household commodity demands are formed in the first period of the budget plans and paid in the second period which is consistent with the life cycle decision making framework. This was applied to the demand for housing service. Leece (1995) argued that demand for housing service is a "function of total expenditure allocated to the period and current price of the housing service". He argued that a change in circumstance for instance if the household income changes and the prices of the other commodities, the impact on the demand for housing will be through the allocation of total expenditure to the current period. Total expenditure is the current period is the difference between the current income and saving. This implies that total expenditure is the summary of all information about future income, prices and real rates of interest. Thus, total expenditure in the previous period should not be different to the current period.

Leece (1995) argued that since consumption stream is a function of wealth, total expenditure can be a proxy for wealth if age is controlled for.

Historically, Leece (1995) analysed periods of intense rationing in the United Kingdom economy. Prior to the deregulation of the financial market, building society used interest rate as an instrument to regulate and control the mortgages in the UK, thus creating excess demand for mortgage finance. The exclusion of other financial institution particularly banks implied that the household demand for mortgage finance continues which led to a continued situation of excess demand. However, in 1980, the financial market was deregulated, thus allowing banks to take active participation in the mortgage market. Maclennan and Gibb, (1990), Meen, (1985), Hall and Urwin, (1989) studies on the impact of regulation on the demand for mortgage finance found out that deregulation of the financial market reduces the excess demand in the UK economy. Meen (1990) study found out that between 1980 and 1988, the excess demand reduced drastically, and it marked a period of non-existence of rationing.

Leece (1995) paper identified the various forms that rationing could take. He argued that mortgage provider could require the maximum debt to income (Loan to income) or Loan to value, down payment and ever saving record. In addition, variations in interest rate, strict assessment criteria could be set on personal, financial and demographic features of household which could intense rationing. In addition, the various forms identified above, Dicks, (1990) argued that the inflation rate in any economy can reduce the real mortgage balances, this will intensity rationing particularly in an imperfect capital market.

High inflation rate will impact on the mortgage interest rate. This implies that there should be a negative relationship between mortgage demand and mortgage interest rate. High inflation may increase the mortgage interest as mortgage providers tends to pass the cost to the household (mortgage holders) by rising the mortgage interest rate. This will affect variable mortgage contract holders more than the fixed mortgage contracts. Leece (1995) argued that the impact of inflation on mortgage interest rate may not be important in the mortgage equation since there may not be any impact on the variation of the actual size of the mortgage. However, he argued based on the Buckley and Ermisch (1982) paper which argued that, at periods of high inflation, mortgage holders may increase their debt due to the likelihood of potential capital gains on nominal mortgage debt. Leece (1995) argued that the impact of inflation on capital gains can also exist even without rationing.

Leece (1995) emphasized that the impact of an increase in nominal mortgage rate for a cash constrained household with a variable mortgage contract will increase the real value of their current mortgage debt servicing burden. This implies the increase of the monthly repayment payment will drastically reduce the consumption of non-housing consumption. He argued that in a perfect capital market, household could prevent this tilt problem by increasing their borrowing to maintain the same level of repayment at the early stage of their mortgage and pay back in the future when their income increased.

Trailing the lines of the argument above, Leece (1995) argued that the empirical specification of the mortgage demand equation should have nominal and real net of tax mortgage interest rate costs, expected house price inflation. The size and sign of these explanatory variables are of significance importance to determine the mortgage finance.

In the other to capture the effect of credit market rationing, Lecce (1995) paper adopted empirical proxy used in Meen (1985) for rationing which was in form of dummy variables. The dummy variables were used to register the effect of rationing and its continuous effect on the mortgage equation. The paper followed Wilcox (1985) by including loan to value ratio in the mortgage demand equation. This was used as a direct measure of rationing and proxies for non-interest terms of lending as captured by Nellis and Thom (1983). A dummy was used captured periods of high and low rationing regimes.

Leece (1995) argued from the life cycle perspective that maximum loan to value ratio could have a significant impact on the optimal life cycle path of expenditure, saving and borrowing. For a household to be granted a mortgage, it is required to save out of their current income to accumulate the obligatory deposit. Saving for the required deposit could be a daunting task for a wealth constrained household. This implies that for the household to maintain the rate of saving, non-housing consumption will have to reduce to accommodate the current level of savings. This will change after the property have been purchased and increase when the income increases later in the lifetime, thus consistent with the life cycle model. Based on this argument, Leece (1995) used expenditure as a proxy for wealth.

3. 8 Econometric Specification

Leece (1995) paper specified a double hurdle model which used on cross section data on household mortgage demand and incorporated the impact of rationing. He argued that the structural changes due to rationing can be noticeable through the parameter estimates of nominal and real mortgage interest rate net of standard rate tax, loan to value ratio and interaction with the dummy variable to capture the effect of deregulation of the financial market on household decisions. The cross-section impact on mortgage decision are captured with the addition of wealth, household income, and other demographic features of the household as part of the explanatory variables.

Leece (1995) theoretical perspective influenced the methodology adopted for his study. He argued that household consumption decision comprising discrete and continuous choice. Based on this, a latent unobservable variable M^* was used to derive $M^* = \beta x_i + u_i$. The observable variable $M = M^*$ if M^* is greater than zero, otherwise, it will be zero. Leece (1995) express a mortgage as

$$E[M] = 0 * Prob[M = 0] + E[M^*|M^* > 0] * Prob[M^* > 0]$$

This part of the equation $(E[M^*|M^* > 0] * Prob[M^* > 0]$ is the expected value of a mortgage which is the product of expected mean value of a mortgage M when M > 0 and the probability that M > 0. The other part of the equation$(0 * Prob[M = 0])$ is expressed as the zero value of mortgage. This is the probability of the household not getting a mortgage.

Leece (1995) argued that the zero values are included in the estimation to keep the aspect of discrete and continuous choice. Based on this argument, a null hypothesis if there is no rationing in a competitive credit market was tested against the alternative hypothesis.

The first assumption based on a Tobit requirement was that household with a mortgage will assume the value of one. Based on this assumption, household without a mortgage but desire a mortgage would have a value of zero. With the restriction of zero which arise encouraged the introduction of a second hurdle. This was used to capture the likelihood of a household being rationed. The rationing element is captured as R* which can be expressed as

R* = θz + e.

From the rationing equation, Leece (1995) used the rationing index to express household being rationed as θz > -e and household that is not rationed as θz < -e.

To test the presence of rationing, Leece (1995) used a probit estimate for the presence of a mortgage and a truncated regression to determine the impact of rationing on the size of the mortgage. "The presence of the hurdle in the truncated regression necessitated the probit estimate to be used to determine the probability index required to generate a probability positive value for a mortgage" (Leece, 1995). The probit likelihood function was specified as

$$L = \prod_t [F(\beta'x_t)]^{d_t}[1 - F(\beta'x_t)]^{(1-d_t)}$$

$F(\beta'x_t)$ is the determinants of the likelihood for a non-zero demand for a mortgage and the log likelihood functional form can be expressed as:

$$In\, l = \sum d_t\, InF(\beta'x_t) + (1 - d_t)In\,(1 - F(\beta'x_t)$$

The data used in the analysis was from the family expenditure survey for 1986. This survey includes information of around 7000 thousand households with various information on

income and expenditure pattern significant to this paper. The historical position and the housing data allow the ease to calculation of mortgage balances. The limitation dataset is that Scotland was excluded due to the different housing finance system existing there. The information of households that are not employed and retired were excluded. In addition to this household decision made before 1960 was disregarded.

Household with a mortgage was denoted by (YMOR =1), this was used as a dependent variable for the probit estimation. However, household with zero mortgage were assumed to have a mortgage at the time of entry of a property. The truncated regression made use of real mortgage balance at the point of origin expressed in 1985 prices (RMOR).

Nominal mortgage balances were computed based on data in current interest payments and the mortgage types. Mortgage rate payment was used to determine the mortgage type and endowment mortgages were computed as the capitalised value of the current interest payments.

House price index of department of environment was used to compute the real increase in house prices. A regional dummy variable was used to capture the different impact of probability of getting a mortgage. Wealth was captured by using the log of total expenditure. The log total expenditure was computed as $\log C_{t-s} = \log C_t - (t-s)\log(r-p)$. Where C_t is expenditure as at the date of the interview, (t – s) was used to represent age, r = real rate of interest, p denote individual rate of time of preference. Due to the non-availability of data on household income for the head of the household, a wage simple equation was used. The wage equation: gross income of head of house was used as a dependent variable and independent variables are: Regional dummies, age, age square, education, married and manual.

Leece (1995) used a dummy variable to analyse the impact of the job the household is engaged on the constant term. If the household is a manual worker (MAN = 1) or otherwise. In addition to this, a dummy variable denoted by RATION was used to capture the effect of deregulation on the availability of mortgages. The value of 1 was used for periods of mortgage decisions before 1980 and otherwise the value of zero applies. Leece (1995) used this dummy variable RATION to interact with gross income at the time of purchase (RINC), nominal interest rate (NOMI), real interest rate (RNET), loan to value (LOAN).

The model was specified as:

$$RMOR = \alpha + \beta_{D=1......8} \text{ Regional Dummies} + \beta_1 \text{ RATION} + \beta_2 \text{ TEXP} + \beta_3 \text{ AGE} + \beta_4 \text{ INCOME} + \beta_5$$
$$\text{MANUAL} + \beta_6 \text{ MARRIED} + \beta_7 \text{ RATION* INCOME} + \beta_8 \text{ MALE} + \beta_9 \text{ ROOMS} + \beta_{10} \text{ MANUAL} *$$
$$\text{INCOME} + \beta_{11} \text{ RESX} + \beta_{12} \text{ CHILD} + \beta_{13} \text{ NOMI} + \beta_{14} \text{ RATION} * \text{NOMI} + \beta_{15} \text{ REALI} + \beta_{16} \text{ RATION} *$$
$$\text{REALI} + \beta_{17} \text{ ERHP} + \beta_{18} \text{ LOAN} + \beta_{19} \text{ RATION} * \text{LOAN}$$

Where RMOR stands for real mortgage balance, RATION stands for housing decision before 1980, TEXP stands for total household expenditure, AGE represent the head of the household at the date of interview, INCOME is real income, MANUAL denote a dummy to capture the occupation of the head of the household, MARRIED represent marital status, RATION* INCOME is the product of the rationing dummy and real income, MALE when the head of the household is male = 1 otherwise zero, ROOMS denoted the numbers of rooms in the property, MANUAL * INCOME is the product of dummy variable for manual worker and real income, CHILD3 denote child between 5 year and 18 years, NOMI represent nominal interest rate net of standard rate tax, RATION * NOMI is the product of rationing dummy and nominal interest rate, REALI represent real interest rate, RATION * REALI is the product of the rationing dummy and real interest rate, ERHP is the expected relative house price inflation, LOAN is the loan to value, RATION * LOAN is the product of the rationing dummy and loan to value.

The empirical result of the parameter estimates of the probability index revealed that the coefficient of age was positive. However, Leece (1995) argued that there is a likelihood of cohort bias in the cross-section dataset used for the study. This is because the data cut across different early stages in the household lifecycle and preference may differ. He emphasized that due to improvement in the general life standard and the possibility of inter-generational transfer, real wealth will be higher for the current generation of household compared to their older cohorts. In order to control for this, current expenditure was used as a proxy for wealth.

The coefficient of nominal and real mortgage interest rate of tax was negative. But for RATION it was positive, although not statistically significant. The log of the loan to value ratio was also positive and significant showing the existence of rationing during the period. However, the interaction with the rationing dummy did not change the sign of their coefficient and not significantly different from zero.

The truncated regression revealed that the coefficient of income was positive and statistically significant. This implies that the impact is significant on real mortgage balance. However, the impact was reduced when it interacted with the deregulation dummy variable. The coefficient of total expenditure was positive but was not statistically significant. This shows the impact of rationing on the size mortgage balance during the period. It is worth mentioning that loan to value and the product of loan to value and RATION were significantly different from zero (Leece, 1995). The coefficient of the real and nominal mortgage interest rates was positive and significantly different from zero.

Based on the result, the paper concluded that the assumption of a perfect capital market and non-existence of rationing should be rejected. The paper acknowledged the change in regime after 1980 which should have a significant impact on borrowing constraints. Leece (1995) argued that cross section variables indicated that the variation in wealth, household age, region, older children, influence household decision to access a mortgage while the size of the mortgage is influenced by regional location, age, income and size of the property.

3.9 Application of the models

This research will apply the two models to investigate the impact of rationing on the demand for mortgage finance in the Nigeria mortgage market. The first model (Meen model) structure will be adopted. Meen (1990) paper used structural change in regimes to analyse the impact of rationing, that is pre financial liberation and post financial liberation. The research will use the bank recapitalization exercise of 2005 as a structural change in the financial market. Theoretically, an increase in bank capital should reduce rationing in the mortgage market. Consequently, more participation of financial institution particularly Banks in the mortgage market based on the Nigeria context, the ability of Bank to create long term funds needed in the mortgage market depends on the capital structure and its availability which adequate capital will ensure.

3.10 Summary
This section critically investigated the understanding of the concept of rationing in the mortgage market, a review of the theoretical and empirical models relating to the types of rationing and the adjustment mechanism in the mortgage market was done. Based on the above theoretical and empirical perspective, two papers (Meen 1990) and Leece (1995) were

explored. These papers will be adopted to measure the impact of rationing on the Nigeria mortgage market.

Chapter 4: Supply of Funds in the Mortgage Market

4.0   Introduction

Finance is a critical factor to be considered when the discussion of the supply side of the mortgage market is undertaken. Since it is the hub of the financial system, the role of financial institution particularly Banks in supplying the funds needed in the mortgage market will be discussed. This is particularly important to understand the associated constraints in an emerging economy like Nigeria where the average household live on less than two dollars a day (World, 2015) when compared to the developed and advanced economies like the United States, United Kingdom and Canada.

This section objective is:

1. To understand the theoretical basis for banks granting loans including mortgages.

2. Discuss a brief history of the financial institution in Nigeria.

3. To critically identify and investigate models that are relevant to this study of how bank performance can influence their capacity to grant long term loans needed in the mortgage market.

4. Based on the models identified, a suitable model will be identified and used to investigate factors/constraints affecting the supply of mortgage finance using dataset from Nigerian financial industry.

From the theoretical perspective of the activities of financial institutions particularly Banks is based on financial intermediation.

Financial Intermediation is the process in which funds move from a surplus sector to deficit sector in an economy and the mechanism is facilitated by the financial institution particularly banks. Banks provide an avenue when saver can safely keep their money and gather such funds to create risk assets for a return.

The financial intermediation, however, continue to exist because the financial market exhibit imperfections. Scholtens and Wensveen (2003) argued that if market imperfection exists, there will be financial intermediation. The perfection of the market will make the intermediation function of financial institution unnecessary as savers and investors will have

perfect information at their disposal about each other and can easily transact without any barriers, at no cost and at the right price.

The neoclassical model for perfect market for capital identified some critical assumptions which must hold, such as: market prices cannot be controlled by any agents, borrowing and lending rates are equal, non-existence of discriminatory tax system, non-existence of economies of scope and scale, financial instruments in the market are similar, divisible and tradable, availability of free and perfect information, non-existence of transaction cost and insolvency costs (Scholtens and Wensveen, 2003). They are of the view that any deviation from the perfect market model discussed above will always necessitate the continued existence of financial institutions. However, since, the world exists on imperfections, financial institution intermediation is here to stay and since perfect market model may not be achievable, the rigidity in the financial market should be relaxed through liberalised and deregulation regimes.

Scholtens and Wensveen (2003) paper identified and categorised the reasons for the continuous existence of financial intermediation into three main arguments. Which are: information problems, transaction costs and regulatory factors.

4.1 Information asymmetries argument

Information asymmetries can exist before the transaction took place (ex-ante) or after the event (ex post). Scholtens and Wensveen (2003) argued that those ex ante asymmetries can lead to adverse selection. This is because the lenders may not have the relevant information about the borrowing households and as a consequent take a risk preventing strategy by setting risk assessment criteria on which it will base the decision whether to lend or not.

It could also be ex post in nature, when the borrower only takes the returns after the completion of the project, thus leaving the loan unpaid. This will lead to a moral hazard problem. A moral hazard problem exists when the borrower leaves the loan unpaid. This have the tendency to result in additional cost like auditing or other costs such as verification of the assets and enforcements to recover the delinquent assets.

Scholtens and Wensveen (2003) analysed Information asymmetry literatures which examined that relationships that exist between the bank and the borrowing households on one hand and bank and lenders on the other hand. In their view, they argued that the relationships can

be of two basic types regarding bank lending, which are transactions-based lending and relationship-based lending. The transaction-based lending are based on evidence from financial statements, asset portfolio and credit scoring etc. which are used at the time of the loan assessment and approval. On the other hand, data gathered on the existing relationship are used as indicators when the loans are being originated. The following studies such as Lehman and Neuberger (2001) and Berger and Udell (2002) evidenced this in their findings.

Scholtens and Wensveen (2003) emphasized that bank-borrower relationship emphasized that screening and monitoring capability of the financial institution. The bank use screening methods to ration households which may prevent the honest households from getting their desired loan amount. This may be consequent on households not meeting conditions such as initial deposit/upfront payments and other documentation requirements may be rationed. This was evidenced in the following papers, such as Akerlof (1970) who emphasized the adverse selection problem in the loan's origination, Stiglitz and Weiss (1981) study analysed the role of bank in credit rationing. Moral hazard problems were identified in Stiglitz and Weiss (1983).

The classification was based on the transaction cost approach. This was evidenced in the studies of Benson and Smith (1976) and Fama (1980). Scholtens and Wensveen (2003) argued that the transaction cost does not challenge the assumption of a perfect market, but it is based on non-convexities in transaction technology. They further emphasized that financial intermediation functions of bank place them in an advantage position to exploit lenders and borrowers using their technology. However, the study of Fischer (1983) justified that the transaction cost charged by bank is not only on exchange or monetary cost but include also search cost, monitoring and auditing cost.

The third reason for financial intermediaries identified from Scholtens and Wensveen (2003) paper was based on the regulation of money production and financing of the economy. They argued that regulation have a significant impact on the solvency and liquidity of any financial institution.

Diamond and Rajan (2000), Ahmad et al (2009) studies evidenced that bank capital regulation has a significant influence on bank financial soundness and safety, refinancing capabilities, recovery from borrowers their outstanding payment.

Scholtens and Wensveen (2003) emphasized that the safety and soundness of the financial system and in addition to, it being the core of the financial, industrial sector and fiscal policy are the main reasons why it is mandatory for regulation in the financial industry. However, such regulation is not cheap particularly in a financial system. The cost of regulation can be direct and indirect.

The direct cost relates to the cost of administration and engaging experienced manpower who are to monitor and ensure compliance of the directive of the monetary authority. The indirect cost is viewed from the various distortions to such policies (Scholtens and Wensveen, 2003). They argued further that regulation can create rent for the regulated financial intermediaries. This is because the regulation imposed could serve as a barrier to entry and exit to the market. However, the few banks can maintain their share of the market. Thus, market power can have a significant impact on the financial intermediation.

Based on this understanding, the next will be the discussion on the supply of funds for mortgage finance.

4.2 SUPPLY OF FUNDS FOR MORTGAGE FINANCE

The discussion of the supply of mortgage funds in any economy rest on the ability of the financial institution particularly banks to supply funds to meet the demand for mortgage finance in the economy. However, inadequate capitalisation of bank, inconsistent monetary policies, and unstable macroeconomics variables such as exchange rate, inflation and interest rate may prevent the banks in performing its lending functions. This section will discuss a brief background of the Nigeria financial Banking sector and critically analyse factors that influence the ability of the supply agent in meeting the demand for mortgage finance in the Nigeria economy.

Ikpefan & Oligbo (2012) and Ajekigbe (2009) analysed the Nigeria financial system and identified the various economic, social and institutional factors responsible for the failure of Banks in Nigeria such as poor asset quality, under capitalisation, inexperienced work force, illiquidity, incoherent and inconsistent regulatory policies and supervision were the bane of banks in Nigeria. They are of the view that such financial system will produce failed banks. A failed bank or a Bank in a grave situation may not be able to lend or grant any types of loan the household requested.

Ikpefan (2012) argued that bank capital has a great influence on the performance of bank. This show their financial strength to absorb shocks that may occur in the bank's daily activities. The study emphasized that bank capital is what the bank will depend on when its reserves are eroded. Reserves are what the Banks saved for raining days. Insufficient bank capital in the Nigeria Banking system is an indicator which affect public confidence in the system to fail. Thus, inadequate bank capital may be an impediment for banks to grant necessary credit needed in the mortgage market.

A historical perspective of the Nigeria financial system revealed that the various steps taken by the Central Bank of Nigeria to increase the capital base of banks in Nigeria to deal with the under capitalisation of banks problems identified. This becomes imperative to make Nigeria Bank to be competitive globally and to play one of their main roles of lending, thus have a direct link to the success of the mortgage market. Ikpefan (2012) argued that inadequate bank capital affect banks in terms of volume, type and character of banking business, thus their ability to meet their customer's request for mortgage credit.

Table 4.1   BANK CAPITAL BASE IN NIGERIA FROM 1952 – 2006

Year	Capital Base
1952	£25,000
1958	£25,000
1969	£600,000
1979	N600,000
1988	N5m
1988	N10m
1989	N20m
1991	N50m
1998	N500m
2001	N1B
2006	N25B

Source: Compiled from CBN Annual Reports

Banks in Nigeria are characterised by small size banks with low capital and high cost of operations. Big banks with financial muscle also enjoy economies of scale which bring their

cost of operations to lowest minimum. Until 2006, the banking industry was dominated by small, inefficient banks which did not have the capacity to grant long-term finance needed in the mortgage market. Ikpefan (2012) supported the above that the weakness has the limiting factors in the Nigerian Banking industry which prevented the banks in performing their developmental role in the economy, thus, impacting on the achievement of the macroeconomic objective of the government. This is because the financial system is the hub of any economy and this is instrumental to ensuring price stability, macroeconomic stability, employment generation and creation and increase in national output. In addition to this, the ability of the economy to compete among his peers is a function of the financial system.

Ikpefan (2012), Demirguc-Kunt and Detragiache (1998) emphasized that the soundness, safety and profitability of a bank determines the quality of its loan portfolio. Financially sound banks with adequate capital base will be consistent in meeting their obligations when customers come calling. On the other hand, small banks with inadequate capital may be subject of bank runs which may lead to collapse of the financial system if most of the banks are affected. It can be deduced that any economy without a sound and safe financial system may not be profitable and may not be interested in granting mortgage credit.

The ability of financial institutions particularly banks to grant credit should be accessed through their financial conditions which can be examined using basic indicators and trends analysis such as capital adequacy, asset quality, earnings and liquidity (Ojo, 1992, Oluyemi, 1995, Eke,1999). Ikpefan (2012) enumerated that apart from the quantitative factors, other important qualitative factors such as quality of management, strictness of the regulatory authority in regulating the bank and the degree of banking service to the domestic economy are also good indicators to assess the performance and financial capabilities of financial institutions in granting long-term credit like mortgage in any economy.

Hilbers et al (2000) developed a new tool for assessing financial system soundness. This is known as macro prudential indicators (MPI) which gives a holistic view of indicators that determines the health and stability of the financial system of any economy. The framework was developed to assess and monitor financial sector of IMF member countries with the aim of identifying the risk factors which could affect the health and stability of the financial sector. The macro prudential indicators are important because it combined aggregated micro prudential indicators which analyse the health of the individual financial institution and

macroeconomics variables associated with financial system soundness. Hilbers at el (2000) emphasized that the influence of both the aggregated micro prudential indicators and macro prudential indicators shows the vulnerabilities of the financial institutions to grant long term credit which is the central in the mortgage market. This also show the weakness in the financial institution and the impact of macroeconomic shocks and its effect on financial intermediation.

Hilbers et al (2000) used CAMELS frameworks as the indicators of the state of health of the financial system. The CAMELS framework examines six aspect of the financial institution which determines their health and soundness and thus, their ability to grant loan term mortgage fund needed to sustain the mortgage market. They are capital adequacy, asset quality, management soundness, earnings, liquidity and sensitivity to market risk.

Capital. The capital base and structure determine the performance of a bank. Hilbers at el (2000) argued that the capital adequacy indicates the capacity of financial institution to withstand shocks to their balance sheet. This specifies the minimum capital requirement the bank must have at every interval. They emphasized that it is important to monitor the ratio to show financial institution exposure to financial risks which could emanate from foreign exchange, credit and interest rate risk. If the capital is low, any shock could make the bank insolvent and hence, may not be able to perform their function of intermediation.

In addition to the above, Evans (2000) et al argued that capital adequacy of a bank should be captured by aggregate risk-based capital ratio. This measures the ratio of bank capital to risk-adjusted asset. They emphasized that a fall in the ratio will be a pointer to increased risk exposure of the bank which may lead to capital adequacy problem.

Asset. Hilbers at el (2000) argued that the solvency of any financial institution depends on the quality of its asset. If the asset become impaired, monitoring of the portfolio become necessary to determine the level of exposure to specific risks. The understanding the trends of the nonperforming loans could assist to determine the soundness and health of the financial institution, thus its profitability.

Evans at el (2000) argued that asset quality could be impaired if the lending institutions have a sectoral credit concentration. For instance, a sectoral credit concentration that is not properly monitored may lead to the collapse of a bank. A sectoral credit concentration in the

property market may be a sign of weakness in the financial system. This is evidenced when subprime lending was popular in the UK and USA.

The level of non-performing loans is also a signal of the asset quality. A high increase in the trend of non-performing loans indicate the state of the poor asset quality. This has a negative impact on the financial institutions particularly on cash flow, net income and solvency (Evan at el (2000). However, they argued that the information on non-performing loan may not be enough to judge the state of financial soundness of any financial institution.

The **debt equity ratio** can also be used to determine the asset quality of a financial institution. If there is a high debt equity ratio, this implies that there is too much corporate borrowing. This trend signals a distress in the financial system. Evan at el (2000) argued that a situation where the growth in the corporate indebtedness is higher than the rate of growth in any country's gross domestic product, that implies that the bank has reversed their previously stringent lending policy to increase lending. This could have adverse impact on the financial soundness of a bank if there is a sectoral credit concentration in sectors that are vulnerable to economic shocks like the housing sector.

Management. The effectiveness and the impact of management activities is an important indicator which can influence a bank performance. An efficient management team with experience can bring about innovations and initiatives which can turn around the fortune of a financial institution. However, Hilbers at el (2000) further argued that bank efficiency can be used as an indicator for management soundness. Ikpefan (2012) added that the characteristics of poor management are demonstrated by excessive operating expenses, inadequate administration of loan portfolio, overly aggressive policies to attract deposit. In addition to this, lack of corporate governance and institutional framework inadequacies could not check the excesses of management.

Evans at el (2000), Hilbers at el (2000) argued that though management soundness is a qualitative indicator, it can be measured by expense ratios, which is the operational expenses to total revenue. A high or increasing ratio may signal that the bank is not operational efficient, which could have a negative impact on profitability. Similarly, this is earnings per employee. Low earnings per employee may imply lack of management commitment to staffing issues which may lead to inefficiencies as highly skilled staffs may be fewer in the Bank. However,

such situation may be where it is overstaffed with low quality staff which may lead to negative impact on profitability. The increasing number of financial institutions is also an important indicator of management soundness.

Earnings and Profitability Indicators. The sustainability of a bank's earnings over a long period of the financial years is a good indicator of the performance of a financial institution. A sustainable earning of banks is a good signal of their strength of performing their function of financial intermediation. Evans at el (2000) and Hilbers at el (2000) emphasized the importance of earnings as a sustain indicator of any financial institution and argued that unprofitable financial institutions in any economy risk insolvency. They concluded that this indicator when compared with the others should be considered with caution as consistent earnings could be a result of excessive risk taking which could be a matter of time for the loans to be non-performing and the bank in financial difficulty.

Evans at el (2000) argued that earnings and profitability of a financial institution can be captured by the following ratios.

Return on assets (ROA). This is captured by the ratio of net profit to the total assets. On the other hand, return on equity (ROE) captures the ratio of net profit to the return on bank capital. Evans at el (2000) express concerns with this ratio and they argued that the ratio could be high which may indicate high profitability and low capitalization vice versa. Income and expense ratio show a pattern of a sustainable profit for a financial institution. High income generated from their operations signal's profitability. Low expense ratio on the hand means high profitability.

Liquidity. A liquid bank has the adequate capital to meet its obligations as at when due and demand for new credit. Inadequate liquidity may damage a bank reputation and may encourage a bank runs. On the other hand, a bank with excessive liquidity implies that the banks are not lending which may affect their earning. The management of liquidity is an important indicator which may adversely affect the performance of a bank.

Evans at el (2000) identified the following indicators of liquidity to any financial institution, which are: Central bank credit to financial institution. An increase in such from the central bank is an indicator of liquidity issues in the bank which if not properly managed may lead to a bank runs. Also, segmentation activities is also an indicator. A situation in which a high

interbank rate exist could be an indicator that some financial institutions are in a grave situation and there is a high risk of lending to them. The high interbank interest rate is used as an instrument to control banks that are making desperate effort to increase their deposit level. In the same light, change in interbank credit limit and reluctant attitude to lend to some banks by others is an indicator of financial problems. The share of a bank deposit as a share of the monetary aggregate may signal the liquidity of the financial institution. A fall in the deposits to M2 may indicate that there is a loss of confidence and liquidity problems (Evans et al, 2000).

Sensitivity of market risk. Financial institutions performance is subjected to various risk in the financial market which could determine their performance. The volatility in the market impact on profitability and its solvency may be significantly affected if there is a high investment in assets that are highly vulnerable to market risk. A bank involved in trading in stock, commodity and foreign exchange market can be insolvent if a transaction goes bad. E.g UBS trading issues in 2011. Adequate monitoring structure should be put in place to monitor equity and commodity price risk.

Evans at el (2000) argued that sensitivity of any financial institution particularly banks can be analysed by examining the volatility to the following risk, such as foreign exchange risk, interest rate risk, interest rate equity price risk and commodity price risk.

Foreign exchange risk exposure could impact on the financial soundness of a financial institution if there is a large foreign exchange position and large reliance on foreign borrowing. When there is a fluctuation in the domestic currency against the other, this may lead to vulnerability of the financial institution and if the swing is against the financial institution, such bank will be unsound and unhealthy to grant long-term credit needed for mortgage finance.

Interest Rate risk has been argued to be most prominent financial risk that will impact on a financial institution. High interest rate will raise the bank books and trading book while a low interest rate is detrimental to the bank's book. For instance, a situation of low interest rate may impact on the earnings and profitability of a financial institution, which will affect the soundness of the bank and its ability to grant mortgage loan.

Equity price risk is noticeable if the financial institution has a large investment on volatility securities. Activities in the stock markets could make the bank vulnerable to risk that could

occur if there is a crash in the stock market. For instance, eight Nigerian banks were in grave situation in 2009 due to their significant exposure to the stock market. If such situation occurs, the ability to grant credit for housing may not be possible.

Macroeconomic indicators. The performance of the financial institution has been linked directly to the performance of the economy (Hilbers et al (2000), Evans et al (2000). The volatility of macroeconomic variables has been seen to have significant influence on bank performance preceding any banking crises not only in developed economy but also in emerging economies. Hilbers et al (2000) argued that if an accurate assessment of financial soundness and health of a financial institution to determine their effectiveness in granting of loans particularly mortgage finance, such should incorporate the macroeconomic variables. Especially for instance in an economy that is vulnerable to capital flow reversal and currency crises like Nigerian economy. They stressed that the relevant macroeconomic indicators are data on aggregate and sectoral growth, trends in the balance of payment, level and volatility of inflation, interest and exchange rates, the growth of credit and changes in asset prices particularly stock and real estate prices.

Economic growth is the increase in the value of goods and service in an economy over a period. As the economic activities increases, so also is the bank performance. This is because debt servicing capacity of the household increases. However, recession have an adverse impact on the productivity of the economy and the bank performance as well. This is because the debt servicing capacity of the households reduce, and this may lead to credit risk problems. Evans et al (2000) argued that recession in any economy may lead to systemic financial distress.

Declines in sectoral lending. Evans et al (2000) argued that if there is a decline in the sectors where the concentration of loans and investments are, that will have a significant impact on the bank performance and the state of its health. The asset quality will be affected and profitability as the asset deteriorates, so also the cash flow and their reserves.

Balance of Payments is a record of economic activity that exist between a country and its foreign counterparties. A positive balance of payment will exist when the country receives more in term of payment for exported goods and services than its import. Evans et al (2000) analysed the following components of balance of payments which could have a significant impact on the health and soundness of financial institution in an economy, which are:

Current account deficit. Evans et al (2000) argued that a large external capital inflow will have a significant impact on the country's financial system. This has been instrumental in facilitating asset price and credit booms, thus increase earnings and profitability of banks. The reserves will occur if the current account position is in deficit, thus this may signal the weakness of the domestic economy and the financial institution as well, as liquidity issue may arise. This may be prominent if the deficit is in the current account is financed by short time portfolio capital inflows. Investments in any economy may decline if the current account position is concerned unsafe by foreign investor.

Reserve and External debt. A country reserves are the saving made for its economic activities which could be used to buffer the fluctuation that could occur due to business cycles. A decline in reserves of the country shows that the economy is vulnerable to economic shocks and financial soundness of the financial institutions may be doubt. High external debt may also be an indicator of vulnerability to a major liquidity issues that could occur as the economy may not be able to meet up with its payment obligations.

Volatility of inflation. High level of fluctuation in inflation levels affect the economy performance including financial system. The direct impact on the economy could result in credit and market risk. Evans et al (2000) argued that there is a positive association that exist between inflation and high relative price volatility. Reducing level of inflation have the tendency to reduce nominal income and cash flows which have a significant influence on liquidity and solvency of financial institution. Evans et al (2000) emphasized that banks could gain from the management of the assets when there is high inflation, however, the financial institution could be vulnerable, and the state of health revealed when inflation suddenly reduced and earnings from such declines. Consequently, Bank may not be able to grant the long-term credit needed in the mortgage finance.

Volatility of Interest and exchange rates. Evans et al (2000) emphasized that rapid fluctuation of interest and exchange rates, the greater the chance of the financial system show signals of vulnerability. This scenario is possible if the financial system is geared up with a high external debt burden and there is a high proportion of the foreign investment in their total investment portfolio. This may lead to vulnerability of the financial system if the rate suddenly fluctuates. Evans at el (2000) argued that the volatility in the exchange could be a major cause of financial difficulty due to currency mismatches that could exist in a bank's assets and liabilities.

However, they are of the opinion that a fluctuation of domestic and international interest rate could have a significant impact on the financial system if the banks cannot avoid the associated interest rate risk, which could be a negative effect on the credit quality of the bank, as high interest rate could generate more non performing facilities.

However, having examined the theoretical perspective of factors that are critical to the financial health of a bank in performing its financial intermediation role, the next section will critically review various studies that will form the foundation for the model that will be adopted to examine and investigate the role of financial institution in the granting of long term mortgage finance.

4.2.1 Demirguc-kunt and Detragiache (1998) Model

Demirguc-kunt and Detragiache (1998) argued that the financial health and soundness is directly related to the macroeconomic environment. They emphasized that a weak macroeconomic environment will lead to a weak financial institution and thus those institutions may not be able to perform its function of intermediation, such as granting a long-term mortgage loan. They are of the opinion that a distressed banking sector will limit the flow of credit to the household to augment their consumption. This prompted policy maker to come up with initiatives to reduce the failure/distress of banks, such interventions are from loose monetary policy to rolling out of financial bailout of insolvent bank and in extreme circumstance, the banks are nationalised. Taking responsibility for this on the part of the government came with its disadvantages. There are: the high cost the budget, encourage the continuing operations of the inefficient bank in the economy, future hope of such bailout in the future which may reduce the creativity of enterprise risk management inventive because banks believe the government will always bail them out of financial difficulty. This could also lead to reckless attitude on the part of management of the bank. In addition to these, Demirguc-kunt and Detragiache (1998) argued that bailout may be inflationary if the strictness of monetary policy is relaxed to prevent losses to bank.

Demirguc-kunt and Detragiache (1998) study investigated "the characteristic of an economic environment that breed the banking sector fragility which leads to banking crises. The relevance of this paper to this thesis was how the authors were able to capture the influence of macroeconomic environment on the performance of banks. However, the performance of

banks in term of their financial soundness have a great significance to determine if the bank will grant long term loan mortgages which is needed in the mortgage market.

Demirguc-kunt and Detragiache (1998) emphasized from the theoretical perspective that a bank become insolvent when the value of its assets is lower to that of its liabilities. However, the fall in the asset value most time is due to households' inability to meet up their obligations to the bank, thus creating large non-performing loan to the bank's books (Credit risk). They suggested that the impact of credit risk to the banks book can be reduced if stringent conditions were put in place, such as systematic screening of loan applications, loan portfolio diversification to reduce granting loan to high risk borrower and including in the loan conditions that the household should provide a suitable collateral. However, they argued that default risk cannot be eliminated without it affecting the fundamental function of banks as financial intermediaries. This is because a high loan default will make the banks to make losses which may erode the banks reserves and equity and eventually, it will become insolvent.

Demirguc-kunt and Detragiache (1998) identified from their study the impact of high interest rate of the bank balance sheet. This could occur in two ways. Firstly, this is a situation where the increase is a short-term interest rate. This sudden increase will make the bank to increase the interest paid on deposit and thus it may not be able to adjust the interest on long term loans which are usually running on a fixed interest rate contract. Thus, reducing the banks' profits. On the other hand, a high interest may not be advantageous even if it were passed to the customers. Another disadvantage of high interest rate is the tendency to increase the non-performing asset of the bank and consequently, this will be written back to the bank profit. They concluded that such high interest rate in the short run is a significant source of a systemic banking sector problem.

In addition to the above, the disparities between the rate of return that occur when banks borrow in foreign currency and lend in domestic currency could also lead to bank insolvency. For instance, if the bank exposure is high, this will result in an unexpected depreciation of the domestic currency and thus, banks profit will be affected, and the bank could be insolvent. Demirguc-kunt and Detragiache (1998) argued that such open position could be reduced if the funds sources from aboard are given as loan to the nationals in foreign currency. Such will remove foreign exchange risk but the backdrop is that such may lead to high non-performing

loans even though the bank has transferred the risk to the customer. The customers may not be able to meet up with their responsibilities because the loan will be too expensive for them because the loans are denominated in foreign currency.

Demirguc-kunt and Detragiache (1998) emphasized the impact of insurance scheme in the financial system. The non-availability of this scheme implies that bank deposits are not insured against unforeseen circumstances. And the consequence of this and such information available to customers about the state of health of the bank may trigger massive deposit withdrawal (Bank runs). This may further deteriorate the bank balance sheet, and such could lead to the bank becoming insolvent. A financial system with robust insurance scheme will boost customer confidence because they know that their deposits are safe and protected.

Weak supervision and legal institutional structure were identified as also a factor that would make a bank vulnerable to financial crisis. This would encourage bank's management to invest in risky project which may not bring the projected income and fees, thus, increasing the non-performing loan of the bank. Increase in inside trading and investing in bogus project with the purpose of converting the loans to personal use. A weak supervision and legal structure encourage fraudulent activities to go unpunished which increases the likelihood of the bank failure.

Demirguc-kunt and Detragiache (1998) examined the impact of these factors that affect bank performance in discharging their fundamental function of financial intermediation. To establish the macroeconomic environment impact on the financial fragility of Banks, a multivariate logit model was used.

The dependent variable was a crisis dummy which took the value of 1 when there is crisis and zero when not. The likelihood of crisis to occur in an economy is captured in the function as a vector of number of explanatory variables which is denoted as *n*, thus X (*i, t*). β is a vector of the coefficients and the cumulative probability distribution of β'X(I ,t) is expressed as F(β'X(i ,t). The log-likelihood function was expressed as:

$$\text{Ln } L = \sum_{t=1\ldots T} \sum_{i=1\ldots n} P(I, t) \ln\{ F(\beta'X(i ,t)\} + (1 - P (I, t))\ln (1 - F(\beta'X(i ,t))$$

For the above, this can be deduced as the likelihood of the banking crisis depends on the

explanatory variables and their coefficients. In addition, the sign of the coefficients determines the direction of such changes and its scale is dependent on the slope of the cumulative distribution function at (β'X(i ,t)).

To capture the impact of macroeconomic shock that the affect the performance of bank and its ability to grant long term credit, the following variables were identified: the rate of growth of real GDP, external terms of trade and real short-term interest rate. A change in real short-term interest rate have the tendency to impact on the bank balance sheet. High real short-term interest rate, for instance, will increase the bank's liability to its asset. In addition, real interest rate can be used to capture financial liberalization. This is because the financial liberalization may increase the fragility in the banking industry through excessive risk taking and fraudulent practices.

Demirguc-kunt and Detragiache (1998) argued that the progress with financial liberation is characterised with a change in real credit. They emphasized that excessive credit regime is usually followed by financial crisis. To corroborate this argument, the global financial crisis was fuelled by sub-prime based lending. Inflation was included as an explanatory variable because of its impact on high nominal interest rate. High inflation will increase the nonperforming loan, thus significantly impacting on the bank balance sheet. Inflation can be proxy for macroeconomic mismanagement which impact is significant on the economic performance which will directly influence the performance of the banking sector.

The rate of depreciation of the exchange rate was also considered. This is because excessive dependent on foreign borrowing or credit line could drive foreign exchange risk of the bank if local currency depreciates. The ratio of M2 to foreign exchange reserves was used to investigate the impact on the financial system if there is a sudden capital outflow in the economy. This ratio shows the vulnerability of the economy to balance of payments crises. Government surplus as a percentage of GDP was also identified as an explanatory variable. The reasons for including this variable are: firstly, "government strapped for funds often postpose measures to strengthen bank balance sheets". This is because government may be broke and may not be ready for such colossal expenditure when government bails out insolvent banks. Secondly, the fiscal position of the government (deficit budget) could be an impediment to financial liberalization.

Demirguc-kunt and Detragiache (1998) argued that a liquid banking system may not be affected by any adverse macroeconomic shock. This is because the bank can remain solvent and be able to perform its function. The study captured liquidity in the financial system as the ratio of bank cash and reserves to bank assets. The importance of deposit insurance scheme was captured with a dummy variable for the period where such existed in the financial system. The impact of scheme will reduce bank runs and thus reducing bank fragility. Lastly, the recklessness and financial fraud could deteriorate the banks' balance sheet. The study used indexes of quality of the legal system and administrative bureaucracy and GDP per capita. They argued that administrative capability of any country should be correlated with the effective prudential supervision of the banking system. Demirguc-kunt and Detragiache (1998) model was specified as:

Bank performance = f (Macroeconomic variables, Financial variables, Institutional variables)

The macroeconomic variables are rate of growth of real GDP (GROWTH), external terms of trade (TOTCHANGE), rate of depreciation of exchange rate (DEPRECIATION), real interest rate (RLINTEREST), inflation (INFLATION), and government surplus as a percentage of GDP (SURPLUS/GDP)

Financial variables are change in real credit (CREDITGRO), M2 to foreign exchange reserve, Liquidity (CASH/BANK), rate of growth real domestic credit (PRIVATE/GDP)

Institutional variables are: real GDP per capita (GDP/CAP), explicit deposit insurance scheme (DEPOSITINS), and index of the quality of law enforcement (LAW & ORDER).

The econometric specification is stated as:

Bank Performance = $\alpha + \beta_1$ GROWTH + β_2 TOTCHANGE + β_3 DEPRECIATION + β_4 RLINTEREST + β_5 INFLATION + β_6 SURPLUS/GDP + ϕ_1 PRIVATE/GDP + ϕ_2 M2/RESERVES + ϕ_3 CASH/BANK + ϕ_4 CREDITGRO + X_1 GDP/CAP + X_2 DEPOSITINS + X_3 LAWS & ORDER + π.

The coefficient of the variables are $\beta_{1....6} \phi_{1.....4} X_{1....3}$, α is the intercept and π is the disturbance variable.

The estimated result evidenced it that low GDP growth is an indicator a high likelihood for the

banking system is in crisis. This is because an insolvent banking sector may not be able to support economic activities which have the capacity to improve the economy. In addition to this, the study confirmed that the real side of the economy is a major source of the systemic banking sector problems. The coefficient of the term of trade was -0.45, thus indicating that there is a weakening in the soundness of the financial institutions. From the results, it can be deduced that a negative shock impacted on the banks' balance sheet thus reducing their ability to function properly in term of financial intermediation.

The real interest rate and inflation coefficient are positive and significant, thus evidencing the vulnerability of the banking system to nominal and real interest rate shocks. The exchange rate impact was not significant which indicate that financial institutions that were exposed to foreign borrowing were very minimal to influence a crisis. It was observed that external vulnerability as a significant influence of the financial soundness of banks in any economy. This was measure with the ratio of M2 to reserves and this shows an increase in the chance of fuelling a crisis if the foreign investor pulls out their funds in the banking system. Like this, if there is a substantial exposure to private sector borrowing, such could make the financial sector vulnerable if there is a sudden withdrawal of their investment. Credit growth coefficient is positive and significant, thus evidenced that high credit growth could lead to financial crisis. Liquidity coefficient is negative but significant, this implies low liquidity is indicator of an unhealthy situation in the financial market.

Demirguc-kunt and Detragiache (1998) argued that theoretically, if law and order index is low, that implies the ability to loot and carry out a fraudulent activity and weakness in the supervision capabilities which could lead to crisis in the banking sector. The coefficients of law and order was low, thus indicating financial recklessness and vulnerability of the financial sector. The coefficient of the deposit insurance dummy variable is positive. This shows that the existence of a deposit insurance scheme will prevent bank runs and the bank's book will be stable. However, without the policy this could lead to fragility in the banking sector.

The study was able to identify macroeconomic and institutional factors are influential to determine the financial soundness of the banking system in any economy. The conclusion was that the vulnerability of the financial system developed from the weakness of the macroeconomic environment. However, the drawback of the study was that focus was on

macroeconomic and institutional variables while variables that capture the financial structure of the bank were ignored. A general financial market variable used in the study may be not enough to analysis the bank's financial position. These includes degree of capitalization of bank, concentration, structure of the competition of the market for credit, liquidity of the interbank market and bond market, ownership structure of the bank (Public or Private, Local or Foreign), activities of the regulatory authority.

4.2.2 Anthanasoglou, Brissimis and Delis (2005) Model

Anthanasoglou at el (2005) study used a model that incorporated the bank-specific, industry specific and macroeconomic variables to critically understand their impact on bank's performance via profitability. This research considered a model to examine the impact of bank-specific and industry variables on bank performance. It was emphasized that only healthy banks will be able to grant a long-term funds needed for mortgage finance which makes it necessary to examine at the micro level the determinant of a healthy bank. The study considered bank specific determinants which are within the bank's controls and their impact on bank performance. The variables considered are operating efficiency, financial risk and size. The industry-structure factors identified are industry concentration and the ownership status of banks.

Anthanasoglou at el (2005) argued that profitability of any financial institution depends on the internal and external factors. The internal factors are variables such as size, capital, risk management and expense management. They emphasized that size of financial institution has features of economies of scale, thus, this implies that as the bank increase in size, the cost (operating expenses) tends to fall, which will increase the bank's profit. Effective risk management process will reduce the poor asset quality as high nonperforming loan will have a negative impact on the bank books which Demirguc-kunt and Detragiache (1998) argued may lead to bank failure. Low liquidity does have a great impact on the probability of bank. The more banks are exposed to high nonperforming assets, the lower the returns from such investment and the lower the bank profitability. This further reduces its liquidity position.

Bank expenses relate to the efficiency of the bank's management. A high performing management should put in place strategies to reduce expenses. They argued that there should be positive correlation relationship between bank's profitability and bank expenses.

Anthanasoglou at el (2005) examined the impact of inflation rate, long term interest rate and the growth of money supply on bank's profitability. Expectation of the future rise in inflation rate could make the bank adjust their interest upwards to cover their cost and still make profit. Thus, this implies that the expected increase in the rate of inflation has a positive impact on bank's profit and a sudden increase in interest rate will have a negative impact on banks' profit.

The linear model specified was as

$$\prod_{it} \quad = \quad c \; + \; \sum_{k=1}^{k} \beta_k \, X_{it}^k + \varepsilon_{it}$$

$$\varepsilon_{it} = V_{it} + \mu_{it}$$

$\prod_{it}$ Stands for profitability of bank, C denotes constant term X_{it}^k are the explanatory variables and ε_{it} stands the disturbance variable which is made up of V_{it} as the ignored bank-specific effect and μ_{it} is the idiosyncratic error.

The explanatory variable X_{it}^k is made up of the bank specific, industry specific and macroeconomic variables. The profitability model can further be expressed as:

$$\prod_{it} \quad = C + \sum_{j=1}^{J} \beta_j \, X_{it}^i + \sum_{l=1}^{l} \beta_i \, X_{it}^i + \sum_{m=1}^{M} \beta_m \, X_{it}^m + \; \varepsilon_{it}$$

From the above, $\sum_{j=1}^{J} \beta_j \, X_{it}^i$ represent bank-specific determinants of bank's profit, $\sum_{l=1}^{l} \beta_i \, X_{it}^i$ represents industry specific determinant of bank's profit and $\sum_{m=1}^{M} \beta_m \, X_{it}^m$ represents macroeconomic variables that influence bank's profit.

Anthanasoglou at el (2005) study adopted a dynamic specification by adding a lagged dependent variable to the independent variable. The reason for this is that a fall in bank profit should persist over a period and there is a likelihood of it being serially correlated with regional/macroeconomic shock and market competition. However, Anthanasoglou at el (2005) study augmented the profit function with the lagged dependent variable and it was specified as:

$$\prod_{it} \quad = C + \delta \prod_{i,t-1} + \sum_{j=1}^{J} \beta_j \, X_{it}^i + \sum_{l=1}^{l} \beta_i \, X_{it}^i + \sum_{m=1}^{M} \beta_m \, X_{it}^m + \; \varepsilon_{it}$$

From the above $\delta\prod_{i,t-1}$ represent previous profitability (one period lagged) and the speed of adjustment to equilibrium was represented by **δ**. They explained that the value of the speed of adjustment is between 0 and 1 where the speed of adjustment is near zero, which implies industry is competitive and a value close to 1 implies a less competitive structure (Anthanasoglou at el, 2005).

The dependent variable was profitability which is captured by returns on assets (ROA) which is expressed as net profit before taxes divided by assets or by returns on equity (ROE) which is expressed as Net profit before taxes divided by equity.

The bank specific variable used in the paper are as follows. The first variable is capital (EA) which is expressed as equity divided by assets. The second variable is credit risk which is loan loss provision divided by loans. The three variables are productivity growth (PR), this is captured by rate of change in inflation adjusted gross total revenue divided by personal. Operating expenses management (EXP) was expressed as operating expenses divided by assets. Size (S) is expressed as Ln (real assets) and Ln (real assets)^2.

The industry specific variables are ownership Status and Industry concentration. On ownership status, it was publicly owned or not. A dummy variable was used to capture the impact of ownership status on banks performance. For instance, if the banks are privately owned or not, thus if it is privately owned the dummy is one otherwise zero. Size was all captured in term of market share (assets) of privately-owned banks. Concentration was captured through herfindahl-Hirschman index. This is used to measure the level of competition in an industry. This is calculated as the sum of square of the three largest banks in the economy.

The macroeconomic variables considered were expected inflation and cyclical output. This was captured by current period inflation rate and the cyclical output which captured by deviation of actual output.

The study adopted an unbalanced panel for Greece commercial bank from 1985 to 2001. Anthanasoglou at el (2005) argued that the profitability model could be criticized for non-stationarity of the panel due to the relatively large time dimension T. They used Fisher test. This is because the F test outcome is superior compared to other test for unit root in panel

study. Another advantage of the Fisher test is that, the data does not need to have a balanced panel which is a requirement for most test.

Hausman test was used to determine the suitability of either fixed effect or random effect model and it reveal the test provide support for fixed effect. However, Anthanasoglou at el (2005) argued that a least square estimator of a fixed effect model with a lagged variable included with its dependent variables will lead to biasedness and inconsistency. They emphasized that the bias should be insignificant if the time dimension T is large. Anthanasoglou at el (2005) argued that the issue of bias and inconsistency in `dynamic models can be resolved by instrumental variables estimator based on the first-differenced form of the original equation'. This was suggested that the inclusion of all available lagged values of the dependent variables and exogenous regressors as instruments to improve the efficiency of the model.

To determine if the capital is to be modelled as an endogenous variable and credit risk as a predetermined variable, Anthanasoglou at el (2005) conduct the analysis by running the model twice. The first test analysed both variables as endogenous while the second test was different, capital was used as an endogenous variable and credit risk as a predetermined variable. However, it was revealed that the second test was better off. This was because the over-identification restrictions obtained from Sargan test favoured the second test.

Due to the large time frame, Anthanasoglou at el (2005) included the time effect in the error component of the model.

$$\prod_{it} = C + \delta\prod_{i,t-1} + \sum_{j=1}^{J} \beta_j X_{it}^i + \sum_{l=1}^{l} \beta_i X_{it}^i + \sum_{m=1}^{M} \beta_m X_{it}^m + \varepsilon_{it}$$

$\varepsilon_{it} = V_{it} + \mu_{it} + \lambda_{it}$

λ_{it} represent the unobservable time effect. However, the joint significance of λ_{it} was tested by null hypothesis which was stated as $H_0 : \lambda_2 = \lambda_3 = \lambda_T = 0$ against the $H_1 : \lambda_2 = \lambda_3 = \lambda_T \neq 0$. The null hypothesis was rejected which necessitated the inclusion of the year specific dummy variables to account for the unobservable time effect. A dummy variable D_{99} was included in the model because that year there was extra ordinary activities in the stock market, thus

expanding the model to:

$$\prod_{it} = C + \delta\prod_{i,t-1} + \sum_{j=1}^{J} \beta_j X_{it}^i + \sum_{l=1}^{l} \beta_i X_{it}^i + \sum_{m=1}^{M} \beta_m X_{it}^m \; \gamma D_{99} + \varepsilon_{it}$$

$\varepsilon_{it} = V_{it} + \mu_{it}$

From the estimate of the model using return on assets (ROA) as the dependent variable relevant specification test was conducted for the model. Anthanasoglou at el (2005) empirical result suggested that the model fit the panel data with stable coefficients. This was supported by Wald test for goodness of fit and Sargan test came out with no evidence of over-identifying restrictions.

The coefficient of the capital variable (EA) is positive and significant, thus implying that a bank with adequate capital base is in favourable position to pursue businesses and meet the demand for long term credits such as mortgage finance. Credit risk coefficient was negative and significant. This implied that as the bank management intensified their effort to increase the bank's profit, lending criteria's were relaxed to accommodate high risk borrowers which may increase their profit at the early stages of the loans and consequently, may reduce the bank's profit when the loan loss portfolio increases due to classification of non-performing risk assets. Productivity growth was positive and has significant impact on profitability. This implies that the more productive the bank is, the more likely that the bank will be making profit. Operating expenses is negative and thus impact on profitability. This implies that management lack the efficiency in reducing operating expenses and the bank's inability to pass it to their customer have kept the cost high. The size of banks in the Greek has no impact on profitability from the study. This implies that the bank emphasis is on increasing their market share and not improving their profitability. Ownership status does not have any significant impact on profitability. Concentration coefficient is negative which implies that this does not affect profitability. Anthanasoglou at el (2005) argued that concentration will be negatively related to bank's profitability if other dependent variables have been controlled for in the profitability equation. This was evidenced by the coefficient of the lagged profitability variable (0.357) thus implying a low market power. Finally, Anthanasoglou at el (2005) study analysed the impact of business cycle and it revealed that business cycle does affect bank's

profitability. The study suggests that when output increased significantly, the coefficient of cyclical output double. The reserve was the case when there was a fall in output. Anthanasoglou at el (2005) concluded that fluctuation in the economy do have a significant influence on the profitability of banks. And from this research perspective, only profitable banks can be able to grant long term credit needed for mortgage finance, all things remain the same. Anthanasoglou at el (2005) study evidenced that there is a positive relationship between inflation and profitability.

Overall, Anthanasoglou at el (2005) study evidenced that profitability in banks are mostly influenced by bank specific factors and macroeconomics variables. However, Industry factors happen not to have significant influence on banks profitability.

4.2.3 Flamini, McDonald, and Schumacher (2009) Model

Flamini at el (2009) investigated the bank profit in sub –Saharan Africa (SSA) and argued that bank profit is high in SSA compared to the rest of the region. The study adopted a similar model from Anthanasoglou et al (2005) study and added other variables specific to the region analysed in the study and similar methodology was adopted. Flamini at el (2009) analysed bank specific, country specific and macroeconomic determinants that could affect the profitability and fragility of any financial institution using balance sheet and income statement information.

The model was specified as follows:

$$ROA_{it} = \alpha + \sum_j \beta_j X_{ic,j}^j + \sum_m \beta_m X_{c,t}^m + \sum_n \beta_n X_t^n + V_{it}$$

From the above, ROA_{it} represent return on assets for the specific bank in a country, the constant is represented by α, $\sum_j \beta_j X_{ic,j}^j$ stands for the bank specific factors, $\sum_m \beta_m X_{c,t}^m$ are country specific factors and $\sum_n \beta_n X_t^n$ stand for factors that are synonymous to Sub-Sahara Africa.

A lagged dependent variable was added to the regressors to make a dynamic model specification. This was done to capture the propensity of profit to continue over time which could be as a result of imperfection in the market structure. The model is as follow:

$$ROA_{it} = \alpha + \gamma ROA_{ic,t-1} + \sum_j \beta_j X_{ic,j}^j + \sum_m \beta_m X_{c,t}^m + \sum_n \beta_n X_t^n + V_{it}$$

Flamini at el (2009) study measured bank profitability by using return on assets (ROA) which can be obtained by banks after tax profit over total assets.

The bank specific determinants use in Flamini at el (2009) study are:

Credit risk (CrRisk), this is captured by dividing total loan with the addition of deposit and short-term funding. Flamini at el (2009) argued that since the bank portfolio of outstanding loans can be traded, this variable should be modelled as a predetermined variable and there should be a positive relationship between profits and bank risk.

Activity mix (Mix) was captured as the net interest revenues divided by other operating income. Flamini at el (2009) emphasized that this variable was used to capture the various risk the bank undertook to generate income which is influenced by credit risk and its volatility. They further argued that high level of activities will generate higher returns while a bank that depend on high non-interest earning assets will be less profitable.

Capital (Equity) was captured by dividing equity by total asset. Flamini et al (2009) argued that adequately capitalised banks are less risky and are safe unlike the less capitalized bank which are vulnerable and unsafe. Size as a bank specific variable was captured by Ln (total assets) and Ln (total assets)[2.] They argued that the size of a bank can influence its profitability, if the bank's share of the market is high in an environment with relatively no intense competitive compared with a small bank. They emphasized that size is related to economies of scale in term of cost of operations. Large banks tend to have lower operation cost which tends to increase profit.

Flamini et al (2009) emphasized that ownership status of commercial bank does have a significant influence in their performance and financial stability. They argued that state owned banks are less profitable compared to their privately-owned counterparts. The following reasons were identified: imperfect designed incentives which are better in private banks to the state owned. In addition to this, state owned banks have other objectives than profit maximization, such as welfare maximization and giving back to the community.

Market power of a bank contribute significantly to a bank's profitability. Flamini et al (2009)

argued that banks in more concentrated markets should be able to adjust when there is a shock in the macroeconomic environment to leave their returns unaffected. To analyse the impact of market power, Flamini et al (2009) argued that market concentration can be measured in the following ways. Firstly, the ratio of each bank's total outstanding loans to the net domestic credit of the country. Secondly, by the impact of managerial inefficiency which can be captured by log of overheads costs. Thirdly, by the square of the coefficient of size variable.

Macroeconomics determinants

Flamini et al (2009) argued that the ability of a bank to performance its function of financial intermediation is dependent on the macroeconomic indicators. Flamini et al (2009) paper based their choice of variables on theoretical literatures such as Berger (1995), Anthanasoglou at el (2005), Demirguc-kunt and Detragiache (1998) and it consider the following variables to capture impact of macroeconomic volatility on a bank's performance.

Gross domestic product (GDP) growth was used to capture the cyclical output effects. This should have a positive impact on bank's performance. Flamini et al (2009) argued that as GDP growth slowdown in an economy, credit quality deteriorates which increases the likelihood of defaults and will have significant impact on banks performance. Thus, this will be used to analyse the impact of business cycle on bank performance.

Inflation was captured by the current period CPI growth rate, price of fuel and price of a commodity index excluding fuel (Non-fuel commodity prices). Flamini et al (2009) argued that due to the dependent of many sub-Sahara Africa (SSA) economies on exports and their economies relies on proceeds from those activities. These activities are worth considering and should have significant influence if there are changes in the economic circumstances. Furthermore, Flamini et al (2009) emphasized that the impact of inflation depends on bank performance depend on the extent of its anticipation. When the movement of inflation is fully anticipated, banks can then adjust their interest rate in order to increase their revenues. However, unanticipated rise in the inflation rate may increase the costs to the banks, thus affecting the profitability.

They used log of GDP to capture the level of economic development and institutional environment which could impact on the bank performance was captured with ease of doing

business index from World Bank statistics.

Flamini et al (2009) argued that based on the dynamic nature of the model, ordinary least square (OLS) method may not be suitable. This is because OLS estimators may be biased and inconsistent as a result of correlation between the unobserved panel level effects and the lagged dependent variable. Flamini at el (2009) adopted a two-step General method moments (GMM) as used by Arellano-Bond (1991) which will produce an error free and unbiased estimator. However, the study produced many panels and few periods and thus, if no correlation, the estimator removed the panel specific heterogeneity by first differencing the regression equation. After this, the lagged levels of the endogenous variables and the first differences of the exogenous variables were used as instruments. The predetermined variables for this study equity and credit risk.

The result was test for model specification using the Wald test statistics which came out rejecting the null hypothesis of joint insignificance of parameters. Sargan test suggested that identifying restrictions are valid and Arellano-Bond test for serial correlation in the first difference residuals showed no sign of model specification. The value test for the second order autocorrelation suggested the moment condition for the model is valid (Flamini et al (2009).

Flamini et al (2009) study evidenced the dynamic nature of the model with the coefficient of the lagged ROA which was significant and showed a fair rate of return. Flamini et al (2009) suggested that the coefficient estimate of 0.21 evidenced the existence of market power in the financial service sector in Sub-Sahara Africa. Previous studies obtained similar result of persistent profit such as Athanasoglou et al (2005), Gibson (2005). However, Goddard et al (2004) study of European banks suggested a weak evidence for persistence profit for bank which shows that no existence of market power in European Banks.

Flamini et al (2009) find out that the well-capitalised bank experience higher returns. This was evidenced by the coefficient of equity which was positive and highly significant. Also, the coefficient of the lagged ROA is positive. This confirm that there is a positive correlation with Bank returns.

The coefficient of credit risk has a positive and significant effect on Bank profitability. This implies that the bank's shareholders are risk averse and are interested in targeted risk adjusted return, thus encouraged by larger earnings that are equal in proportion to the risk taken.

The economies of scale market power hypothesis were evidenced by the coefficient of the size variable. The coefficient of size was positive and significant. This implies that larger bank makes gains due to their size and thus, increases their earnings. However, a negative coefficient of the size variable implies that larger bank suffers from administrative bottlenecks and managerial incompetency, thus impact on their returns. Flamini et al (2009) argued that marginal statistical significance of the coefficient suggests that due to market power, banks spread the cost of their incompetency to the depositors and borrower without adversely affecting their profits.

The coefficient of market concentration suggests that there is no straight impact on bank profitability. The coefficient shows a positive but insignificant effect overhead costs on bank profitability. They argued that since the overhead costs are on the high side in sub-Sahara Africa, the expected result should be negative and significant coefficient. However, the positive and insignificant result suggested that banks could pass the overhead cost to their customers which does not affect their profit. Furthermore, the ability of banks to overcharge their customer shows the present of market power and thus persist in the banking sector.

The coefficient of the bank activity (that is ratio of net interest revenue to other operating income) was negative and highly significant. This suggest that an increase in bank activities means an increase in the contribution from bank activities to banks returns. However, the result implied that from the point of view of banks, profits and losses, income generated from fees represents a relatively stable income compared to loans. This means that diversification of bank activities generates a stable income for the bank.

Flamini et al (2009) argued that macroeconomic variables should have significant influence on the performance of banks in Africa. The coefficient of inflation from the study was positive which suggest a positive influence on bank profit. This suggest that bank ability to foresee future changes in level of inflation and adjust their interest rate without affecting their profit. In addition to this, the coefficient of output growth was positive which indicate that output growth has a positive impact on the bank's probability. However, GDP per capita suggested that it does not affect the bank return and thus, its performance. They argued that wealth does not influence bank performance significantly because majority of the lending activities are directed to exporting firms not to households in sub-Sahara Africa.

The coefficient of price of commodities excluding fuel was positive and significant which shows that the higher commodities prices, the higher is the bank returns. The coefficient of fuel prices was negative which implies that this does dampen banks' profits. Flamini at el (2009) argued that the coefficient came out to be negative because most of the countries in Sub-Sahara countries are importers of petroleum products.

Flamini at el (2009) analysed the impact of ownership status on the bank returns. It was evidenced that public ownership have a significant impact negative influence on bank performance. On the other hand, foreign ownership is not sufficient condition to influence bank performance. Flamini at el (2009) argued that public owed banks plagued with managerial incompetency and administrative bottlenecks which is a sharp contrast to the private counterparts.

Institutional environment in this study does not have any impact on the bank performance. This is evidenced as the ease of doing business index.

4.2.4 Awojobi and Amel (2011) Model

Awojobi and Amel (2011) investigated the factors that affect Bank efficiency in the Nigeria financial system. This was a consequent of the aftermath effect of the global financial crisis in 2007 which impact on Nigeria banks was significant. The banks were hit with declining trend in both profitability and capitalization. The period was characterised with banks in grave situation with resulted in capital inadequacy, poor asset quality, capital market slummed about 70%, and public confidence eroded as their shares value fell drastically. They emphasized that a misplaced of priority was the bane of the financial system in Nigeria as they are interested in short term strategy to make profit with little due diligence on managing risk on the quality of assets which could have contributed significantly to the long term sustainability strategy for the financial institution. The short-term plan resulted in aggressive market expansion, increased capital assets, increased participation in stock market, and increased investment in the petroleum and real estate sector. The consequence of this is an unconstrained lending to safe and unsafe individuals which resulted in increased risk assets which eroded most bank capital due to high default rate of loans after a short period.

The study objective was to analyse the activities of the stakeholders which are bank management and regulatory authorities to mitigate the lingering inadequacies in bank capital

and liquidity problems in the Nigeria financial system. However, theoretically inadequate bank capital and liquidity problem will prevent banks granting long term funds needed in the mortgage market. To investigate this, bank specific indicators and macroeconomics variables were modelled to determine impact of managing risk efficiency in resolving bank capital and liquidity problem (or it was due to trends in the unstable business cycle). Bank specific indications like profitability ratios, liquidity ratio, leverage and efficiency index were used to measure risk take on in the Nigeria financial institution. While GDP growth rate and inflation were used for the macroeconomic component.

Awojobi and Amel (2011) study focused on capital adequacy as a mitigating tool for risk exposure of banks. They argued that banks' exposure to credit and operation risk require capital augmentation to protect their existence when such risk occur. A sample of nine banks was used based on their share of their total risk asset of the financial system from 2003 to 2009. The selected period is important due to ground-breaking reforms, transformation, profit explosion and credit crunch that was experienced during the period.

A panel data was used investigate the impact of macroeconomic indicator such GDP growth and inflation rate with bank specific factors on bank capital adequacy in Nigeria. However, they argued that since risk management is at the centre of preventing insolvency, an efficient risk management system should signal bank solvency level. A panel data methodology was adopted for these reasons: firstly, technical efficiency is enhanced with panel construction, secondly, control for individual heterogeneity, thirdly, model estimators are less biased provided the degree of freedom was increased.

The panel data method thus pool time series and cross-sectional element of the data used for the analysis which improved the identification of stationarity and uncorrelated shocks within a model. The econometric form of the panel regression is

$Y_{it} = \alpha + \beta' X_{it} + \pi_{it} \ (\pi_{it} = \mu_{it} + v_{it})$

From the equation above, Y_{it} represent to the dependent factor and X_{it} is the explanatory variable, X_{it} is exogenous if X_{it} is uncorrelated with error term π_{it}. Where the error team π_{it} is made of μ_{it} which is the unobservable individual effect and v_{it} is the residual of disturbance, α represent the intercept of the equation and β represent the estimated parameters.

Awojobi and Amel (2011) argued that fixed effect model focuses on micro-unit effects thus overlooking the impact of the variations in industry. The study concentrated on the random effect model to enhance the estimation due the method of data collection which is a random sampling method. A Hausman specification test was further used to justify the argument for a random effects model over fixed effect model.

The dependant variable for the study was capital adequacy which in the model is a function of micro and macro variable. Awojobi and Amel (2011) argued that capital adequacy was set a dependent variable for other studies such as Kwan and Eisenbeis (1997), Berger and Young (1997), Hitchins et al (2001) and Ojo (2008). The micro determinants are bank-specific factors and also are within the banks control which can be influenced by their policy. There are bank size which is measured by its total asset, risk asset portfolio, interest sensitivity of assets to liability, management quality and profitability. The macro determinants are economic growth rate, inflation and market interest rate.

The functional form showing the efficiency of a bank is determined by both the bank-specific and macroeconomic factors for the study as:

CAR_{it} = f ($CRisk_{it}$, LQR_{it}, ISR_{it}, ROA_{it}, $SIZE_{it}$, $MRisk_{it}$, OPR_{it}, GRT_{it}, INF_{it})

The econometric specification was expressed as follows:

$CAR_{it} = \alpha + \beta_1 CRisk_{it} + \beta_2 LQR_{it} + \beta_3 ISR_{it} + \beta_4 ROA_{it} + \beta_5 SIZE_{it} + \beta_6 MRisk_{it} + \beta_7 OPR_{it} + \emptyset_1 GRT_{it} + \emptyset_2 INF_{it} + \pi_{it}$ $\pi_{it} = \mu_{it} + v_{it}$)

Awojobi and Amel (2011) used capital adequacy as a measure of solvency level of financial institutions in their study. This was measured by dividing regulatory capital by total risk weighted asset of the financial institution selected for the study. It was represented by CAR_{it}. $CRisk_{it}$ stands for credit risk. Credit risk variable used to measure the default probability of the bank's loan portfolio. It was measured by dividing loan with the bank's total asset. Liquidity was represented by LQR_{it} and it is captured by dividing liquid asset of the financial institution by current liabilities. ISR_{it} stands for interest sensitivity ratio. This measure the sensitivity of banks to interest rate risk which could have significant impact on the assets and liability. This was captured by interest sensitive assets to interest sensitive liabilities. ROA_{it} stands for return

on bank's total assets. This measures profitability of the bank. This was captured here net income divided by total asset. $SIZE_{it}$ stands for size of a financial institution, this is measured by total asset of the bank. $MRisk_{it}$ represents market risk. This was captured with risk exposure of the bank to capital market participation. If the banks have a large investment that is volatile to fluctuation in the capital market, the bank capital can be eroded. OPR_{it} represents operating efficiency used to measure the management quality. Good management quality keeps the operating cost down and enhance the assets of the banks are correctly priced. This was measured by dividing operating expense by net operating income. GRT_{it} stands for economic growth and domestic rate of inflation. These have been identified to have a great impact on banks performance.

The result of the estimation revealed that there is a positive relationship between bank capital adequacy and credit risk which implies that as the loan portfolio of Nigeria banks increases, it is assumed that they are adequately capitalised. From the estimate the coefficient of Liquidity was positive. This implies that the banks can meet up with its obligations as at when due, thus impact on the capital adequacy. Return on asset (ROA) was used to measure bank's profitability. This shows a bank's position as performing and an indicator for a well-capitalised bank. Theoretically, there is a positive relationship between ROA and capital adequacy. However, the estimate from the capital adequacy model existed by Awojobi and Amel (2011) revealed a contradiction to the theoretical argument with a negative relationship between ROA and capital adequacy. They argued that the result could be due to the financial crisis in the Nigeria banking industry in 2009 after the global financial crisis which resulted in most bank declaring losses. In addition to this, the data limitation which subjected their study to analyse 9 banks out the twenty-four banks existing. The result of market risk on the Nigeria bank performance is significant as a positive relationship was evidenced from the estimate. Awojobi and Amel (2011) argued that in a situation where a bank is exposed to uncertainty, adequate capital will prevent the bank from the unforeseen shocks. Interest sensitive ratio (ISR) will impact on bank earnings and thus its performance. Since it measures the ratio of interest sensitive assets to interest sensitive liabilities. An increase in interest rate will increase the bank earnings but a fall in interest rate will have a negative impact on the bank earnings and its net worth. The result revealed a positive coefficient. Awojobi and Amel (2011) argued that this coefficient is positive but less than one which revealed that interest sensitive

liabilities were more than its assets, thus, as interest rate increases, it led to a fall in net interest margin and increased the net worth of the banks. However, the Nigeria scenario was a result of a poor asset pricing and weak floating interest rate regime triggered by market indiscipline and misconduct by bank managements. Operational efficiency was evidenced to have a negative impact on bank efficiency. However, an increase in operational efficiency implies the bank is position for profit and there is a positive influence on capital. But the estimate revealed that the operational efficiency ratio is negative which show that capital adequacy and bank efficiency was reduced by operational efficiency. This implies that Nigeria Banks are not operational efficient in activities, thus affect their efficiency and capital adequacy.

Economic growth and inflation were used as proxies to capture macro-economic impact on bank performance. Awojobi and Amel (2011) used economic growth as a proxies for business cyclicality which had a positive impact on Nigerian banks' capital adequacy. This suggest that Nigeria banks are pro-cyclical to economic cycle. They argued that during economic boom, more capital can be obtained from secondary market to augment their banking business to any shock that could occur however, this may be difficult if the economy is experiencing recession. In period of recession, cost of funds is high and for the existing loans, the default rate is very high. The implication is that earnings will fall, and bank capital may be eroded. Nigeria experience of inflation rate is high. High inflation rate will make interest rate to be high and the cost of funds. The coefficient of inflation established that there is an inverse relationship between it and capital adequacy. This is consistent with the theoretical perspective that capital is expensive to augment with a high rate of inflation. The robustness test for sufficiency of the model revealed that F- statistics test for statistical significance of the model reveal that the model is reliable and significant and the Durbin Watson test for autocorrelation shows no presence of first order autocorrelation. The R^2 was 0.809 which implies that more than 80% variation in capital in Nigeria Banks is explained by bank specific and macroeconomic determinants.

From the various theoretical and empirical models examined above, it was evidenced that financial institutions particularly banks performance in terms of their main role of financial intermediation is determined by contributory factors which are bank specific, industry specific, macroeconomic and institutional factors.

However, not taking eye out of the topic of discussion, which is the role of banks in the supply of funds needed in the mortgage market particularly to the households in the Nigerian context. The main contribution of the above model is the critical look at the context in which financial institution perform their financial intermediation functions. In particular, it can be deduced that the long-term loans needed in the mortgage market should be influenced by not only bank determined factors but by others determinants such as industry, institutional and macroeconomic factors. Based on these determinant, prevalent factors that can militate the development of the mortgage market can be identified.

It can be observed that none of the models discussed specifically investigated the mortgage market. However, the ability of financial institutions to grants long term credits needed in the mortgage market have not been investigated on this scale. This is a gap this research intends to fill particularly in an emerging economy like Nigeria.

4.2.5 Akinwunmi (2009) Model on Supply of funds for mortgage finance.

Akinwunmi (2009) study investigated the role of financial institution in Nigeria in the supply of mortgage finance. His study analysed bank specific factors determinants for the supply of mortgage finance. The study used a four-year period financial data from banks in Nigeria to analyse the capacity of banks in the Nigeria. The model was specified as:

$$Supply\ of\ mortgage\ funds = f(Bank\ Specific\ factors)$$

The dependent variable was loan to housing while the independent variables are the bank specific factors which are: share capital (SH), reserves (R), deposit liabilities (DL), other liabilities (OL), loan to manufacturing (LM), loan to commerce (LM), loan to agriculture (LA), total Investment (TI), cash reserve requirements (CRR), fixed assets (FA), total loans and advances (TL & A), total bank assets (TBA).

$$Y = \alpha + \sum_{i=1}^{n} b_i x_i + \varepsilon$$

Where Y is the dependent variable, α is the intercept, b_i coefficient of the independent variables, x_i is the predictor variables.

This can be expressed as

$$Loans\ to\ houisng$$
$$= F(Share\ capital, Reserves, Deposit\ Liabilities, Other\ Liabilities, Loans\ to\ manufacturing,$$

$$Loans\ to\ agriculture, Total\ Investment, cash\ reserve\ requirement, Fixed\ assets,$$

$$Total\ loans\ and\ Advances, Total\ bank\ assets)$$

Akinwunmi (2009) study captured the supply of mortgage finance at the volume of mortgages granted to the household by banks.

Equity is classified as the internally generated funding for running the business which does not attract any interest payment. This is made up of capital and reserves.

Capital, Akinwunmi (2009) study argued that capital is raised through two means, the public offering and private placements. Adequate capital base to any bank is a means for a successful running of its daily activities. He further emphasized that as the business expansion and profit are made, bank should plough back part of it to the business to increase its capital. However, for this perspective, as the capital grows, there will be increase in loans creation particularly mortgage finance.

Deposit Liabilities. As banks accepts deposit from customers it becomes liabilities to them. Often bank uses this as part of their working capital. In other to increase the deposits, banks often adopt various strategies to entice customer to increase it. Such include various interest rate grids which is with the intension to encourage long term deposit. This implies the longer the deposits is with the bank the more in term of payment on interest the bank will pay. Akinwunmi (2009) argued that due to the sensitive of deposit liabilities to interest rate, bank should source alternative long-term deposit cheaper to sustain the demand for long term mortgage finance.

Other liabilities are classified as long-term financial obligation that are yet to be due. For instance, long term borrowings from agencies such as European Investment Bank (EIB), International Finance Corporation (IFC), African Development Bank (ADB) and World Bank. Akinwunmi (2009) emphasized that banks access to those funds from such institutions will increase the supply of mortgage finance in Nigeria due to their long-term nature.

Loans to other sectors of the economy. These sectors include loan to manufacturing, commerce and agriculture. The ability of the banks to get a quick return on their investment can increase the bank loans to other sectors compared to the mortgage market. This is due to

the long-term tenure of the mortgage, which may not align with the bank's profitability strategy. Such may reduce the supply of mortgage finance.

Cash reserve requirement (CRR) is one of the two reserves a bank should maintain. The other reserve is known as the legal reserves which is in custody of the monetary authority. Cash reserve requirement can be manipulated by the monetary authority in order to regulate money supply in an economy. For instance, if there is a reduction in reserve requirement, this will be expanding money supply and lower interest rate and improves the financial soundness of banks. However, in such instance, banks can perform their function of intermediation which include granting of mortgage finance.

Akinwunmi (2009) used a multiple regression method on data obtained from financial statements of Bank in Nigeria from 2004 to 2007. However, this period was characterized with bank consolidation in Nigeria which the capital base of banks was increased from two billion to twenty-five billion. This exercise produced twenty-four financially sound banks out of the previous eighty-nine.

The empirical estimate was based on the above model and the following result was obtained. The coefficient of share capital, other liabilities, loan to agriculture, total investment, total loans and advances were negatively related to loans to housing. This implies that as there are increase in the dependent variables, supply of mortgage funds will reduce. The coefficient of reserves, loans to manufacturing, loan to commerce, cash reserve requirements and total bank assets are positively related to loan to housing. This implies that as these dependent variables increase, so is the supply of mortgage funds.

Based on the above studies various model have been used to analyse the bank performance in many economies both developed and emerging. What is common to the models is that only a sound financial institution particularly banks will be able to perform its fundamental functions of financial intermediation. It could also be deduced that only a financial institution in sound financial position can grant the long-term funds needed in the mortgage market.

The theoretical and empirical perspective discussed, have evidenced that banks' ability to perform its financial intermediation function (accepting deposits and particularly granting loans) depends on the bank-specific factors, industry specific factors, macroeconomics factors

and institutional factors. And the validity of this statement will be tested in the Nigeria context.

4.3 The Supply for mortgage finance model (Modified Model)

Having critically analysed the various models used in the studies above, it is important to note that the adoption of any of the models may not be adequate to investigate factors/constraints that will influence the supply of mortgage finance. However, in order to achieve this objective, this research will introduce a model that will include bank-specific determinants, industry specific determinants, macroeconomic determinants and institutional determinants. This model will be used to analyse the impact of the supply of mortgage finance.

The model will be specified as:

$$LOAN_{it} = \alpha + \sum_j \beta_j X_t^j + \sum_m \beta_m X_t^m + \sum_n \beta_n X_t^n + \sum_s \beta_s X_t^s + V_{it}$$

Where $LOAN_{it}$ is the loan amount given by banks to the household in a year, X_t^j captures the vectors of bank specific determinants, X_t^m represents the vectors of industry specific determinants, X_t^n is the vectors of macroeconomic determinants and X_t^s represents vectors of institutional determinants. (see details in chapter seven)

4.4 Justification for the Model used.

Having critically analysed Akinwunmi (2009) model, it is obvious that the model is not enough to identify the associated constraints on the supply side of the mortgage market (Supply of funds) in the Nigeria context. Akinwunmi (2009) focussed on the Bank specific determinants as the main factors that can influence how the financial institution particularly banks play its role in the financial markets. Demirguc-kunt and Detragiache (1998), Anthanasoglou et al (2005), Flamini et al (2009), Awojobi and Amel (2011) have emphasized that to determine the financial soundness and the ability of a financial institution to grant long term credit is not based on bank specific factors alone but others such industry factors, institutional factors and macroeconomic factors have great influence on the financial institution. These models are not enough because none of them captured the banks specific, industry specific, macroeconomic and institutional determinants together.

Another argument why Akinwunmi model is not enough for the research is the period covered. It examined four years that is two before and after the consolidation exercise in Nigeria. The

researcher is of the opinion that a suitable model should investigate and identify the associated constraints over a long period of time which covers boom, bust, recovery and stable periods to determine the prevalent constraints. These periods will be covered in this study.

In addition to the above, standardized dataset will be adopted from World Bank, International monetary fund (IMF) and the Central Bank of Nigeria. This will used to provide a robust the assessment and based on the findings, appropriate recommendations will be made.

4.5 Summary

This section has critically analysed the theoretical perspective of financial institution activities which is based on the theory of financial intermediation. It was established that the ability of a financial institution to determine the supply of long-term credit needed in the mortgage market cannot be only bank specific factors but also industry, institutional and macroeconomic factors.

Based on the above discussion, a modified version of flamini et al (2009) will be used to understand the constraints that affects financial institutions in granting the funds needed for mortgage finance.   This is because flamini et al (2009) model critically investigated the bank performance in emerging economies in the Sub-Sahara Africa which Nigeria is part of, and the variables considered are specific to the Nigeria economic environment. This is the first time such a model will be used in this context and a significant contribution to the literature on the Nigeria mortgage market.

Chapter 5: The Nigeria Mortgage Market

5.0   Introduction

The role of affordable housing is a right for every households notwithstanding the location, continent and the economy. The importance of affordable housing cannot be over emphasized. Such a sector should be given prominence in any economy that want to continue to grow and provide basic welfare needs for its citizenry. This sector in the Nigeria economy is underdeveloped and not much emphasis had been given to the development of the housing since Nigeria gained its independence in 1960 under the British Government. It is of the believe that the Nigeria Housing sector should take after its colonial masters, however this is not the case. This research is particularly interested in investigating factors affecting the development of the mortgage market in the Nigeria economy.

The aim of this section is to take a holistic approach to assess the Nigeria mortgage market and bring out the salient arguments that will contribute to the literature on the market from the Nigeria context. This will be achieved by:

- Examining the structure of the Nigeria Mortgage market.

- Developing an overview of the Nigeria macro economy.

- Examining legal, Policy and Regulatory Perspective with respect the Nigeria Mortgage market.

- Analysing the institutional arrangements for Nigeria Mortgage finance.

- The Nigeria housing demand and the financial market.

- Regional investigation of housing market structure and mortgage financing in the Nigeria context.

- Identifying key challenges of accessing Mortgage finance in Nigeria.

5.1   The Structure of the Nigeria Mortgage Market

The current population of Nigeria stands at 201 million people (World Bank, 2019) and the largest as per population and resources in Africa. The economy amongst all odd is a vibrant and productive and consequently the largest economy in Africa as per GDP (23rd largest economy in the World, World Bank, 2015). With the verse population, it was evidenced that

48.1% of the Nigeria population lives in the urban areas which put pressure on the infrastructural facilities in the Urban centres and more importantly, the demand for suitable residence for the populace. And with a 2.48% annual population growth rate, there should be a system in place from the demand and supply side perspectives to cater for this large population. It was emphasized that Nigeria will contribute 10% of the World's populations by 2050 (World Bank, 2015) and adequate measures should be put in place to ensure the identification of the constraints and limiting factors affecting the development of the Nigeria mortgage market with the aim of proffering solutions to the identified problems which could be useful for policy makers and Governments at all levels.

The housing sector in Nigeria is regulated by the Federal Ministry of Power, Works and Housing. This ministry combines three critical sectors, and this may not enable the government to give adequate focus to the Housing sector because the political agenda of the current government is not on housing development. The ministry has two agencies to implement its housing development and provision agenda and there are the federal mortgage Bank of Nigeria (FMBN) and the Federal Housing Authority (FHA). The Central Bank of Nigeria (CBN) have the overall and regulatory functions to coordinate the activities to the FMBN.

The mandate of the FMBN is to act as the apex mortgage institution in Nigeria and coordinate the activities in the mortgage market while the FHA has the mandate to supply low-income housing units to households at the bottom of the housing ladder. These are the households at the bottom of the pyramid whose current accommodations are characterised with overcrowding and shortfall in physical conditions. A critical analysis of the affordability pyramid of Nigeria revealed that 50.23% of the urban population lives on $1.25 dollars per day. The households require government subsidies and a strong collaboration between the public and the private sector. In addition, 78.4% lives within the international poverty line because their earnings are less than $ 2 dollars per day which is appropriately $ 60 dollars a month. While less than 20 % of the population earn between $ 2 and $4 dollars per day and those households earning a minimum wage of $ 116 dollars monthly and by estimation could require borrowing $4, 685 dollars which may not be sufficient to buy the cheapest property. The households here would benefit from further market development of affordable housing units and on the alternative build incrementally over a period of ten years. However, currently, good access to housing through formal development are open to the less than 2 % of the

Nigerian population (CAHF, 2013, World Bank, 2015). However, the root causes are yet to be adequately investigated, which this research will critically and empirically analyse.

Since Independence of 1960, there is a large gap in the housing market especially for the low-income segments of the Nigeria economy. The backlog of housing deficit is in turn of 17 to 20 million (Nubi, 2015) and such a large deficit will require a substantial amount to clear such deficit. The fundamental question is: does the financial institution particularly Banks have the required funds to meet the demand for every households that demand for mortgage finance in Nigeria?

The Nigeria Housing market is divided into two; the formal and the informal housing market. The formal housing market can be divided into two. There are: the formal open market sector of the formal housing market which consists of 5% of the market and it mainly deals with the upper income segment of the population and concentrate on the urban areas in selected states' capitals like Abuja, Lagos, Port Harcourt and Kano. Abuja as the federal Capital territory is classified as the 4th most expensive city in Africa and the main causal factor is the high cost of living and high demand for housing specifically for the high-income class. Other factors which contribute are the difficulty in accessing available land, strict and rigid Abuja master plan, and too much money in the hands of few elite classes that want to buy property in Abuja. Example of such urban areas in Abuja are Asokoro District, Maitama District, Wuse 2, Garki 2, and Gwarinpa.

Lagos was the former federal capital territory and the commercial hub of Nigeria. Consequently, very expensive to live in. Property and living cost is on the high and recently there have been development of mega city which resulted in the surge of new development and upswing in property prices. Examples of such is in Eko Atlantic. Others are Victoria Island, Ikoyi, Lekki, Magodo, Ikeja, Surulere, Gbagada, Ikeja GRA, Parkview, Banana Island, Maryland.

Port Harcourt is the capital of River State. The discovery of Oil in commercial quantities at Oloibiri change the economic orientation of the state. This led to the modernisation and development of the capital city. Oil firms such as Royal Dutch Shell and Chevron have significant interest in the area and as a result, demand for luxurious property increased, thus pushing up high house price. Examples of such popular urban area is the GRA Phase 3.

Kano is a cosmopolitan city; the capital of Kano State is in the Northern Nigeria and it is the

commercial hub of the Northern Nigeria. Kano is the third largest city in Nigeria to Lagos and Ibadan. The significance of the modernisation and property developments of Kano city pre-date colonial Africa because the city was the focal point for the trans Sahara trade routes. The routes connected the North Africa and South European countries in trade. The developments led to demand for high luxurious property and the high demand which is not matched with supply drive up the property prices.

The formal housing based on World Bank (2015) definition is "a product of specialized supply and demand side value chains". Formality concept in housing exist when the property has a legal title, very sound in structure and thus comply with building codes and regulations and such property could be used as a collateral to secure a long-term mortgage loan. The product of such property described above is a combination of efforts from the private and public sector which resulted in the desired output. And such efforts are in terms of land, infrastructural development, design and construction on the supply side of the market and other demand side factors which are critical to the housing finance (World Bank, 2015).

The formal sector in the Nigeria context is made up of the 15% of the housing market (Boleat and Walley, 2008, EFInA, 2010, and World Bank, 2015). This sector, however, has not meet up with the demand for housing and affordable accommodation for the populace. This sector targeted the high-income households in the economy and the few houses available are out of the reach of the low-income households. Consequently, those households who cannot afford a mortgage due to high prices results in renting. In addition to this, the formal housing is mainly a sellers' market and are met for those who can afford it. This is predominantly in suburbs areas outside urban.

The informal housing is the nonconformities with the laws and regulatory frameworks that administers formal access and use of land and buildings (UN-Habitat, 2003, World Bank, 2015). The informal housing sector is not well structured and non-standardized. World Bank (2015) identified the following characterises of informal housing sector as: the property located in suburban area, self-designed and self-built with local materials which can be obtained on credit, properties don't comply with building codes and standards, no structured financial framework – project financed through savings, cooperative and loans from informal lenders, property is built incrementally over a long period of time, non-existence of legal title and no secure of tenure, substandard construction which could collapse.

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In the Nigeria context, the informal housing is very predominant and common among the populace. This constitute about 80% of the housing sector and the low-income groups of the population lives in the settlements and with poor living conditions. The rural areas are common with the informal housing and those areas are overcrowded and lacking basic infrastructure. EFInA (2010) paper emphasized that households in such informal settlements are working in both formal and informal economy and of the 80% of the population that lived in the informal housing and very few of them have been integrated into the formal financial institution. Another unique characteristic housing unit are built incrementally over a period of 10 years.

The development of the Nigeria mortgage market is considered very slow and underdeveloped. The number of transactions consummated in the market to the number of populations is nothing to write home about. In term of statistics, it is less than 200, 000 transactions (CBN, 2015, FMBN, 2016). The ratio of mortgage finance to GDP in Nigeria was 0.5% compared to other countries in Africa such as South Africa, Botswana, Ghana housing sector contributes to GDP are, 31%, 2%, 2% respectively despite the fact Nigeria has the largest economy by GDP which stood at $568 million dollars (Okonjo-Iweala, 2014, World Bank, 2015). With the robust economy like Nigeria, the current state of the housing market should be better than what it is and thus, lay the foundation for the aim of this study which is to identify the constraints and limiting factors to the development of the Nigeria Mortgage market.

5.2   The Overview of the Nigeria Macro-economy

Barau (2010) paper argued that the mortgage finance in Nigeria is yet to be a significant macro-financial factor. This is because the sector is till underdeveloped and thus the financial contribution to the sector in an emerging economy like Nigeria is consider very small. However, Demirguc-kunt and Detragiache (1998) emphasized that the role of macroeconomic environment has a significant performance on the financial sector and thus have a direct link to the development of the mortgage market. Based on this argument, the role of the macro economy cannot be overemphasized. A robust and stable economy is sine qua non to the development of the housing market. The robustness and strength of the Nigeria macroeconomic indicators will be analysed for the past ten years. This study will critically investigate the position of the Nigeria macro-economy and its ability to effectively support the

development of the housing and mortgage market.

Nigeria is in the West Africa sub region along the Gulf of Guinea with borders with Cameroun, Benin, Niger and Chad. Nigeria covers a relatively large masses of mostly arable land with green vegetation and covers about 924 square kilometres. The Nigeria economy is mono-cultural economy which depends on oil production for its revenue and it is the largest producer in Africa and thirteen in the world with 2,428,000 barrel per day (International energy statistics, 2016). As a result, the macroeconomic balance and performance resolves around the volatility in the world price of oil. Consequently, the impact of the oil market on the Nigeria economy opportunities for other market have sprang up such as in the Telecommunications, tourism, power generation and the housing sector. From the 1960 independence, Nigeria have experienced changes in its political scene, from military regime to civilian regime. The latest was in 1999 which a democratically elected administration took over the power from the military after over 30 years of rule. The impact of the military on the development and modernisation of the country was a colossal decay of infrastructure and consequently led to the neglect of the housing sector in Nigeria. Nigeria experience during the military era were characterised with massive corruption and looting of treasury, use of force, disobedience of the court order, unlawfully arrest and detention of opposition, closure of the media houses and restriction of international media and other agencies such as UNICEF, UNIDO, IMF etc., restriction of trading activities with the western world.

However, the introduction of democratic rule to the Nigeria economy encouraged bilateral trade agreement between Nigeria and the rest of the World. This relationship means that goods and services particularly the Nigeria Crude Oil can be traded with the US, UK and Canada without restrictions. Also, is the easy access to cheap funds for the World Bank and other agencies for developmental project including affordable housing projects. For instance, World Bank in 2013 approved a Housing Finance development program for Nigeria. The objective of the program is to increase access of low-income Nigerians to housing mortgage through developing and expanding the primary and secondary mortgage market. The cost of the program is $ 300 Million, and the target is at the end of the program in December 31, 2018, 50,000 mortgages should have been created. If this is effectively implemented, it will be a good dividend of democracy for Nigeria.

Debt cancellation and rescheduling was pursed aggressively because the impact of

outstanding obligations was constraining the development of the infrastructures which the country needs after years of military rule. Travel bans were removed which implies that foreign national and citizens can move freely without restriction to conduct trade deals which brought down the prices and cost of production. This is evidenced by cost of business in Nigeria index which have improved significantly since 1999 (World Bank 2016). This implication of this on the mortgage market from the supply side perspective is reduction in the cost of infrastructure such as water, power, sewage and standardized construction.

The 1999 administration introduced a robust and well-tailored, home developed economic agenda with the focus to alleviate poverty, provision of affordable housing unit for the growing population in Nigeria. The programme has a national and state facets which can be regarded as an all-inclusive program. The national programme is known as national economic empowerment and development strategy (NEEDS). This set a solid foundation for the investment and economic growth platform which the country needs at that time.

The Nigeria economy is classified as low-middle income economy in Sub-Sahara Africa. A general features of Sub-Sahara Africa (SSA) is that it experiences rapid urbanisation as well as growing slum population. This is consequent of many years of neglect and bad administration by corrupt leaders in the regions. Many households tend to migrate to the Urban cities to improve their economic circumstances and may not be able to afford a decent accommodation, thus resulting to the development of slum, putting pressure on infrastructures availability and informal housing. As it stands 4.5 million new individual enters the informal settlements on a yearly basis and It is projected that urban household will be 1.2 billion by 2050 (World Bank, 2015). Many of the households living in these regions cannot afford a standard housing and access to mortgage finance is not in existence. It was evidenced that 5% of the adult population took mortgage loan from financial institution particularly bank in 2015 (World Bank, 2015). The rudiment stage of the housing sector in the Sub-Sahara Africa is a major concern which require a well-functioning housing market which is pivotal to economic growth, financial system and a major source of job creation where unemployment is considered very high.

Investment to boast growth is lacking. This is mainly due to long military rule and decades of infrastructural neglect. For instance, an investor will have to construct and make available infrastructures such good roads, transportation, communication, sewage, water, tunnel and

electric systems. This will make low cost housing to be a high cost investment if the cost of providing the infrastructure are included. And consequently, if the housing units are provided, most of the low-income households may not be able to afford them and for the investor, recurring back their investment may not be achievable at the rate projected. It is estimated that housing investment is just 6% of GDP (World Bank, 2015) in emerging economies particularly Nigeria compared to other countries like to UK and US were housing investment is more than 70% of the GDP. The papers of Leece, (2004), Buckley et al, (2009), Chiquier and Lea, (2009), Hypostat, (2012) emphasized that to boast economic development in an economy, housing investment should account for more than two-thirds of the gross domestic product.

The critical submission in this section is that to expand access to the low income group of the society to have adequate housing, the followings were emphasized which are: improve the quality of existing stock through constant upgrading, extending building incrementally, improve and extend on existing infrastructures reduce cost of producing the housing units, address the associated constraints of housing supply and increase access to housing finance (World Bank, 2015).

In order to address issues identified above, a robust macro economy is a necessity and in order to provide the needed housing stock required in the mortgage market, the economy should be able to withstand any shocks which could be from forces within the country or external influences such as global finance crisis which could bring the economy to a terrible state.

5.3   Evaluation of the Nigerian Macro economy

A critical examination of the performance of the Nigerian macro economy is necessary to understand if the economy is buoyant to support the financial architecture needed in the mortgage market. This review will cover period from 1990 to 2015. These periods are characterized with recession, political instability, bank recapitalization, transformation of the political architecture, profit explosion, credit crunch, recovery and stabilization.

Nigeria is categorised as one of the fastest-growing economies in the World with its peak in 2015. However, the rate of growth has slowed down considerably due to the slump in crude oil-prices.

Currently the rate of growth is 2.3% (IMF, 2016). This translate to the lowest since Nigeria gain democratic rule in 1999. However, this has not always being the case.

The performance of the mortgage market to provide and make available the combination of funds and housing stock for its citizens is a function of the growth of the economy. Rapid economic growth is an important indicator to measure the performance of the economy. The annual GDP growth for Nigeria show the consistency growth of the economy. Constant progressive growth of an economy should be able to support a robust mortgage market. The figure below shows the annual GDP growth in Nigeria from 1990 to 2015.

Table 6.1 Annual GDP Growth (1990-2015)
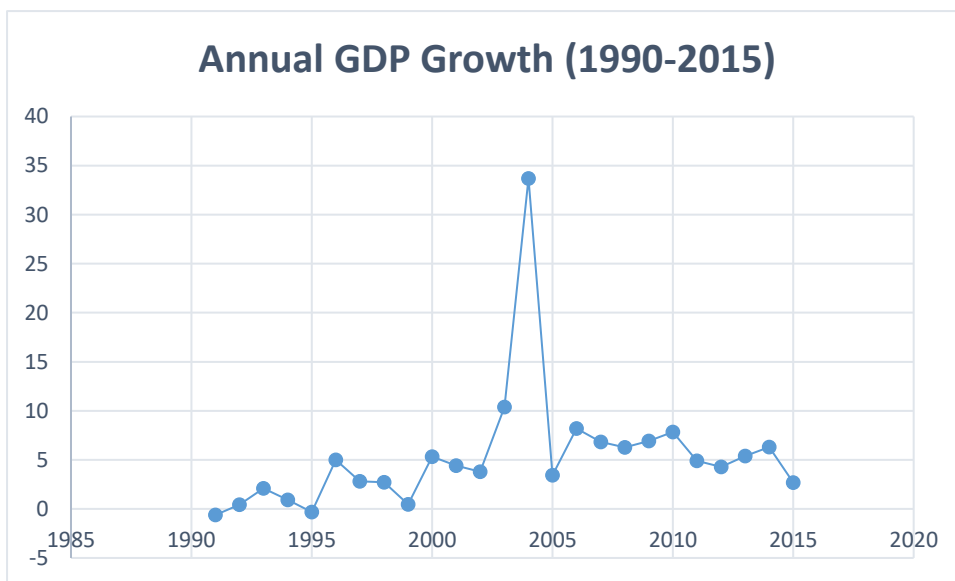
Source: World Bank (2016)

A critical investigation of the growth pattern in Nigeria revealed that Nigeria had an enviable record of macroeconomic stability, there is a consistent growth pattern which could encourage a sustainable development of the mortgage market. The momentary growth in the annual GDP were due to shocks and events which pushed it up. For instance, in 1993, the period of the fourth republic (transfer of power from military to democratic rule) was a period which brought about significant investment into the country and based on this, businesses sprang up in anticipation of democratic rule and Nigeria made a lot of wind fall during the gulf war. After the election was nullified and the economy collapsed. Due to the political instability and insecurity, foreign investors pulled out, European superpowers embassies were shut and embargoes were placed on Nigeria oil at the world markets. Consequently, the economy went into recession and theoretically, an economy in recession without the robust institutional structure in place cannot encourage a robust mortgage market. The situation was similar in

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1999 with the fifth republic, due to the previous experiences, foreign investors and businesses that are the engine of growth pulled out but the only difference was that democratic rule was put in place, businesses and investors' confidence grew, foreign aids returned and most developed economies were ready to do business in Nigeria and consequently, the annual GDP growth increased from 0.474 to 5.32 points. From 2000 to 2010, Nigeria economy maintained a consistent annual growth and as a result robust building of infrastructure, increase in worker salaries, improvement in telecommunication facilities such mobile phones and internet coverage, cancellation of national debt as a result of the strong political will and economic management, building up national reserves. Due to this, Nigeria was highly indebted, poor country crises of the 1990s, and reduce its debt burden from $32.37 Billion in 2000 to $4.8 Billion while there was sharp rise in debt ratios for the advanced economies during the global crisis that began in 2007–08 which resulted in part from unexpected growth slowdowns but the Nigeria economy was steadily growing. This was a resultant effect of a wide-ranging economic reforms and the aim of making the country more resilient to regional and global economic shocks.

Economic recovery was significant from 2010 to 2015, although it has slowed down averaging just over 5% which in real terms is a substantial development, taken cognisant of the fact the natural rate of growth for high-income countries tends to slow down. For instance, UK and US economies averaged 2% - 3% (World Bank, 2016) harder to sustain rapid percentage growth rates.

Ezekwesili (2016) emphasized that Nigeria experienced a sustained growth over a period of 15 years at an annual growth rate of 5 – 6 percent due to a deliberate, sound and well thought through policies which brought about a determining growth and resolving developmental problems peculiar to the Nigeria context. However, the sustained growth did not resolve the major problems synonymous with sub-Sahara Africa like high poverty, high unemployment, big inequality gap and the housing crisis.

More than 60% of the population are classified as poor (NBS, 2015, World Bank, 2015) which thus show that there is a disconnect between the long-sustained growth and poverty reduction. An economy with this prevalent poverty among its populace cannot have a robust mortgage market which will enable households to climb on the property ladder. This is

supported by empirical findings of Ortalo and Rady (2002), (2005), (2006) which emphasized that households with limited income will find it extremely difficult to climb the property ladder.

The current unemployment rate is alarming, this stood at 10.5 % at December, 2015 and the rate grew to 13.3% in the second quarter of 2016 (NBS, 2016) which indicate that despite the economy is the largest in Africa and twenty sixth in the world, young households and youths entering the labour market cannot be absorbed which created a gap in sustainment agenda of the government and the unemployment problem may not be reduced because of an average of 2.5 million youths every year entering the labour market and thus no creative investment strategy to grow manufacturing and agriculture which have the capacity to absorb the massive labour force. The labour force could be utilised in the construction sector and as a result have a multiplier effect in the housing market.

The gap between the rich and poor is huge, the Gini-coefficient stood at 0.43 (World Bank, 2016) thus indicating a high-income inequality. The closer to zero the better. The poor are getting worse while the rich are getting the most out of them. The gap between our top income earners which includes top executives and politicians and the vast majority bottom poor earners (98%) is considered one of the highest in the world. This create an affordability gap for the households at the bottom of the pyramid and in this economy with such characteristic, a viable mortgage market may be difficult to achieve.

The fundamental ingredient for Nigeria's long period of economic growth from 2003 were results of the conscious effort of government and policy makers resolve to achieve macroeconomic stability through an effective mix of monetary, fiscal and some significant structural policies such as ban on importation of products produced in Nigeria, Bank recapitalization, investment promotion drive, political stability, infrastructural development drive, economic diversification drive etc.

The causal factor of the fluctuation in Nigeria economic growth can be attributed to the poor management of resources which came from oil earnings. The lack of the political will to save from earnings from the last five years when the crude oil was high as $150 per barrel consequently, when there are shocks in the economy, the safety nets were not there to

withstand the pressure.

From 2010 to 2014 which was the period of high oil prices which logically, the excess earnings should be saved, and accumulation of wealth strategy should be aggressively pursued. However, the Nigeria government decided to increase borrowing at a mist of plenty which expanded consumption. External debt rose from $15.85 billion to $ 26.85 billion (World Bank, 2016) which fuelled real interest rate which increased from 5.94% to 13.6%. Also, it can be inferred by the increasing annual GDP growth experienced during the period of 2010 to 2015.

The Nigerian economy needs an incisive and urgent macroeconomic stabilization programme to realign price levels in the economy. This is important if the economy can be restructured with a sound monetary and fiscal policies that the economy needed to send the right signal to players that the economy is viable for an all-inclusive mortgage market.

Ezekwesili (2016) emphasized that there should a robust policy response to ensure stability in the economy, such will assist the economy to withstand shocks, build confidence in the market from the investors and consumers perspectives. She emphasized that continuous delay in implementing a string of policy measure towards to end of the 2015 and 2016 were responsible for the decline in economic growth to 2.7 percent points.

The insensitivity of the politicians and policy makers to implement policies that could assist the economy to avoid collapse was instrumental to the negative growth from June to December 2015 and consequently led the country into recession. This showed a decline in the development in the housing sector, as the impact of recession is on the mortgage market. During recession the purchasing power of household in any economy will be considered very low and in term of affordability of a capital-intensive project like purchasing a property will be considered very low.

This has been established that the economy slump will depress economic development and as well the mortgage market. Stiglitz (2000) argued that GDP could be growth indicating boom in the economy with associated vulnerabilities and such vulnerabilities are common with public debt dynamics, monetary policy issues and weaknesses of structural side. In the Argentina's experience of the 1990s, due to period of permanent higher growth which was accompanied with structural reforms and sound macroeconomic policies, no attention was

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given to the vulnerabilities in the economy. However, with a slump in the economic, without the safety net, the economic went into depression which lead to the debt dynamic explosion, fiscal regime adjustment did not stabilize the debt ratio and the lack of political will to bring out the primary surplus was not there. Resulting from the debt dynamics, the ability of the authority to reflate the economy was constrained, the structural weaknesses and unfavourable externalities hampered the export-led growth. He emphasized that sovereign debt restructuring should reduce the debt burden and on which every other strategy should be built on. This is like the Nigeria situation in 2016 and the current macro-economy outlook may not support a vibrate and effective mortgage market.

Another problem affecting the economy is the delay in the implementation of policy, for instance, the government delayed right action on the fuel subsidy regime despite its aggravating impact on fiscal imbalance. Government pay a significant sum every month to reduce the financial burden of the petroleum prices which has been termed as unnecessary because the Nigeria petroleum cartels are sabotaging the government policy to ensure the Nigerians get petroleum products cheaper and use such saving for housing deposit. Over years, households are not able to make such savings because petroleum are not readily available which have to be brought in the black market at high prices, thus eroding their savings.

Delay in deciding on the exchange rate policy deteriorated the economy and such delay in policy implementation eroded the country foreign reserves which consequently affected the value of the Nigeria currency against its foreign counterparts and rate of inflation.

With currently high inflation at double digits of 18% which consequently eroded the country foreign reserve from $37.3 billion at end of 2014 to $25billion in September 2016 (CBN, 2016) as a result of the administrative-floating exchange rate regime which encouraged corruption opportunities and rent seeking arbitrage. This resulted in a high interest rate which put pressure on the financial industry's ability to create long term loans needed in the mortgage market and ability to lend to businesses reduced. This had a direct impact on the asset of the banks in the Nigeria financial system as their asset deteriorates and consequently such financial institutions with deteriorated asset and high loan loss ratio would not be able to grant credit needed in the mortgage market. With declining in the country's aggregate

demand, such having a significant impact on the Gross Domestic Product (GDP) which shrank from $568.49 billion in 2014 to $481.06 billion in 2015 (World Bank, 2015) creating a $11 billion deficit in the 2016 budget which will have to be borrowed and consequently, increased the country's external debt.

In addition to this is the weak monetary policies adopted which failed to impact on the economy and embrace the structural problems of the country. For instance, the free floating exchange rate regime that was previously adopted by the past government which stabilized the economy and achieved a reasonable growth was discarded by the new government for the fixed exchange rate regime and limited the amount of foreign exchange businesses could demand per transaction and as a consequent, the demand outstrip the supply for foreign currencies leading the lower value of the Nigerian currency against its foreign counterparty and increasing the rate of inflation as general price level rises. The implication on the mortgage market is the high cost of construction and property prices which may not be within the reach of the low-income household in the economy.

Furthermore, the government inability to identify and implement structural reforms that are not politically motivated, and which has the strategic framework to encourage and improve the productivity and competitiveness of all potential and existing sources of economic growth like the development of the mortgage market. Thus, boosting Investors and consumers' confidence in the economy. Without, investors and consumers' confidence, demand and foreign direct investment may not be lost, and participation/development of the mortgage market may be hampered.

The inability of the product diversification strategy and blueprint to discover, develop and produce in commercial quantities, other natural resources aimed at changing the mono product culture of the Nigerian economy which is subject to the volatility of the oil price. The view is to build a resilient economy which can withstand the oil price volatility which has made the Nigerian economy in term of its revenue generation vulnerable to shocks in the World oil prices. This is key to the development of Nigeria and if it is to regain macroeconomic stability to support the development of the mortgage market.

In summary, these three broad actions identified remain the key things mandatory for the

economy to regain the lost macroeconomic stability that will drive growth recovery, move us to economic development and shared prosperity. And if Nigeria is to have a versatile macro-economy that will support the mortgage market, a steady and stable economy is necessary.

5.4 The legal, Policy and Regulatory Perspective of the Nigerian Mortgage market.

This section critically examined the legal, policy and regulatory perspective of the Nigerian Mortgage market. The impact of the perspectives on the mortgage market will be discussed and the associated constraints which are common to the development of the mortgage market will be identified.

5.4.1 Legal system

The Nigeria mortgage market and property transaction in the context of the legal perspective is like the English common law. However, Boleat and Walley (2008) emphasized that the similarity is more pronounced in the context of common land ownership. The federal constitution governs on all lands and in property matters, federal laws take lead over the state law. The Nigeria system operate on a federal system of Government and the country is made up of three regions with thirty-six (36) states. This means that the thirty-six (36) states have different laws covering the operational processes and procedure governing how land and property transactions are handled. The implication of this, is that the thirty-six (36) have different land registries which are not linked to each other. This made title confirmation extremely difficult. For instance, if a household wants to get a mortgage from a financial institution which is not domiciled in the state where the property is located, that means the mortgage lender have to get an agent to go to the registry in the state where the land registry is located to confirm the authenticity of the title document.

Regional differences in English common laws adoption pre-date Nigeria independence from the Colonial era. As a consequent, thus made uniformity of common law is not applicable and which created an administrative bottleneck for both the households and the mortgage lenders. For instance, the Property and Conveyancing law of 1959 which is like the English common law of Property Act 1925 was applied predominantly in the former Western regions. On the other, former Northern and Eastern regions and some part of Lagos which was the federal capital adopted the Conveyancing and Law of Property Act 1881 (Boleat and Walley, 2008). These till date has not changed much and thus reducing the households ease access to

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mortgage finance. For instance, cross regional lending is very difficult because households may get cheap interest rate or mortgage products from other regions outside their state of residence.

5.4.2 Land Ownership

The right of ownership is the prerogative of the state. In the Nigeria context, the land ownership is administered under an act which is the Land Use Act of 1978. Under the act, the power of ownership is vested in the state Governor of each of the thirty-six (36) states of the federation. The allocation of the land is through a leasehold system which the households are granted a leasehold of 99 years which is authorised by a certificate of occupancy duly signed by the sitting Government. Without this document in place, it may be difficult to originate a mortgage transaction because mortgage lenders often take this document as the guarantee of the ownership of the property. This often add to the cost and time required to process the registration of a property. A situation that the property is transferred, the governor consent is also required. Change of ownership takes time as the governor is the only authorised administrator.

The land in Nigeria in most part of the country (65% to 70%, Pison, 2010) are still under the customary title. These are title owned by indigenous members of a community and such is administered based on the custom and traditions of the people in that community. This is not a legal title, however, families in the possession of the lands can convert it for further development in accordance with the land use act of 1978. The land allocated under this leasehold arrangement should be developed under two to three years otherwise the land will be taken back. Such uncertainty does not encourage ease access to mortgage finance.

5.4.3 Regulatory Institutions in the Nigeria Mortgage Market

The Nigerian housing market is an essential component of the economy and the regulation on such vital sector is administrated by the Federal Government. The ministry of Power, Works and Housing is solely responsible for the housing sector. The ministry is under the supervision of a federal ministry who is a member of the federal executive council and report to the President of the Federation. And at the state level, the various state ministries of Housing take charge for housing at the state but does not report to the Minister at the Federal level. In term of policies transition, there is a disconnect if there are different policy agenda at the Federal and State level.

From the finance perspective, the central bank of Nigeria (CBN) and the Securities and Exchange Commission are saddled with the responsibility to regulate the activities of the housing sector.

On the professional side of the sector, various professional bodies regulate and influence activities of their members that participate in the sector. Standard and quality are maintained. For example, Estate Surveyors activities are managed by the Nigerian Institution of Estate Surveyors and Valuers (NIESV), the Town Planners by Nigeria Institute of Town Planning (NITP), the Architects by Nigeria Institute of Architects (NIA), Quantity Surveyors by Nigeria Institute of Quantity Surveyors (NIQS), Engineers by Nigerian Society of Engineers (NSE).

5.4.4 The Ministry of Power, Works and Housing
The ministry of Power, Works and Housing emerged as a result of combining three separate ministries into super one. The ministries are power, works and housing. This new ministry was created at the inception of the new administration which came to power after its inauguration on May 29, 2015. The ministry role is to format policy, setting an agenda of inclusion and standards for the housing sector, ensure compliance with building regulations, and safety.

Current Administration Agenda for the Housing Sector

The government emphasized the importance of the housing sector to achieving its political agenda of economic growth and inclusion. The various national housing policies will be reviewed, appraised and necessary adjustments are made. This was done to align the national housing policy with the current government political agenda. This is because inconsistency of policy implementation has been the bane of the housing delivery in Nigeria. The agenda is to aggressively increase the supply of housing units. The focus will be to pursue the construction of public housing and frame policies that will encourage the private sector participation in the housing sector to reduce the housing deficit.

Strategic Intent for the Housing Sector

- Increase the budgetary allocation to the Ministry for national housing. For instance, it was emphasized that the budget for housing sector should be increased by hundreds of billions from N1.8 Billion budgeted in 2015.

- Introduce research innovation to change the construction methods which have the capacity to reduce the completion time if housing units are to be produced on an industrial scale.

- Carry out a sensitization exercise through seminars and conference of the activities of Government and to create awareness for the public.

- Conduct national survey to gather information on household affordability, the type of housing units, what they can pay for the housing units and whether it is possible.

- Re-design the existing housing roof types. This is to be designed to accommodate solar panels which can be used to generate cheaper electricity. Thus, serving as a huge potential for employment opportunities.

- Mandate the State Governments to give out between 5 – 10 hectares with title documents for the potential delivery of housing units. States should also provide infrastructures like accessible road upon completion of the project.

- Emphasized the use of locally sourced materials to reduce the demand for foreign exchange. For instance, doors and windows will generate employment opportunities for thousands of individuals.

- Achieve 17,760 flats nationwide in the first year of the program.

5.4.5 Central Bank of Nigeria (CBN)

This is the apex regulatory authority in the Nigeria financial circle. It came into existence by the CBN act of 1958 and operational on July 1959. The CBN is saddled with the responsibilities of monetary policy, maintain the stability of the economy, sound financial system, manage the national reserves, bankers to the government and advice on financial matters. In addition to the above, the bank act as the lender of the last resort to banks and grant operating licence to financial institutions. The financial institution includes the Deposit money Banks, Primary mortgage Institutions, Microfinance Bank, Finance companies, Bureaus De Change, and Development Finance Institution (CBN, 2016).

In relation to the mortgage market in Nigeria, it serves as the implementing agency for the

World Bank project on Housing financing development project. Under this role, it coordinates the issuing of standard corporate bonds into the capital market with the focus on issuing loan to refinance or pre-finance mortgage lending institution (World Bank, 2016). The agenda of the program is to make the mortgage market a vehicle to grant long term finance needed in the market.

In addition to this, the CBN should ensure a safe and profitable mortgage market through the creation of an enabling and sound financial environment to encourage private sector participation.

5.4.6 Federal Mortgage Bank of Nigeria (FMBN)

The bank is the apex mortgage institution in Nigeria, established in 1956 as a joint venture between the commonwealth Development Corporation and the Federal Government. The Act 3 of 1992 empowered the FMBN to manage and coordinate the National housing fund. This is a mechanism to ensure that households in the formal sector of the economy save some funds towards the deposit required for a mortgage. Due to the various reforms in the housing sector in Nigeria, the 2006 National policy on Housing and Urban development expanded the scope of the Bank and this transformed the institution into Federal Government-sponsored Enterprise with the capacity of a secondary mortgage and capital market function. This gave the bank ability to grant long term funds needed in the mortgage market in Nigeria. This status gave the Bank the oversight function to regulate activities of the primary mortgage institution and others that falls under the scope.

According to the FBMN (2016), the mandate are:

- Aggressive mobilization of local and international funds needed in the housing market.

- Setting up the mechanism to collect and administer National Housing Funds.

- Act as an intermediary between the mortgage market and the capital market by supporting the establishment of an operating secondary market which enhance the primary mortgage market.

- Institutionalize the emergence and promoting of growth of the primary mortgage institutions to ensure the mandate of affordable housing for all is achieved.

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5.4.7 National Housing Trust Fund (NHTF)

This is vehicle in which the Nigerian mortgage market was built on, established in 1992 with the focus of reducing the mortgage finance challenges to the low-income household in the economy. Due to the low saving culture and lack of banking attitude, this was formulated to reduce the housing demand gap and consequently, the inability to access finance from commercial banks and other financial institutions.

The main objective of the funds are:

- Provision of affordable housing units with representative standards

- Emphasized the provision and design for the low-income households

- Ensure that households can access credit to finance the purchase of their desired property.

The fund operates with a mandatory contribution of 2.5% of their basic salary/ earnings/income to the funds. This is targeted at households mainly in the formal sector of the economy. For instance, household working with Government, insurance company, pension sector and financial institutions. The loan is made available for a period of 30 years at 6 % interest rate per annum. The loans are initiated through the various primary mortgage institutions. This is done by checking the application forms and requesting for all documentation and then forward it to the FMBN for approval and disbursement. On approval the PMIs are funded with the household loan amount with 4% interest rate and PMI then disburse the amount into the customers at 6% interest rate. The PMIs monitors the mortgage for performance.

5.4.8 Securities and Exchange Commission (SEC)

This is the apex regulatory institution in charge of the Nigerian Capital Market and to determine the prices of issues and setting of allotment securities (SEC, 2016). The body was established under the SEC degree 29, 1988. In addition to the above, a critical examination of the applications of businesses that wants to raise capital from the capital market is another function and proper administration of the market to prevent clustering which have the capacity to overstretch the market. Due to the changes in the market circumstances, Investment and Securities Act (ISA) 45, 1999 was passed to promote a dynamic, efficient and robust capital market in an emerging economy like Nigeria in order to meet the set objective

of economic growth. This act was reviewed and passed into law in 2007 (SEC, 2016).

SEC published the requirements for registration and issuance for the Real Estate Investment and Trust scheme (REITs) according to the Investment and security Act 2007 (EFInA, 2010). REIT is an investment vehicle where investor invest funds with a company which are met for the investment option in real estate. This can be traded like stocks and it can be easily be sold. The advert of the REIT in the mortgage market provided the investors value added investment option which could be the catalyst the mortgage market needed due to the long-term cheap funds available through the scheme. Examples of such are the Skye Shelter funds in 2007 issued by Skye Bank which was sold out, Union Home hybrid spearheaded by Union Home savings and Loans Plc and the UACN Property Development Company issued the UPDC REIT (SEC, 2016).

5.5   A Review of the Nigeria Housing Policy

It is a widely accepted argument that the role and performance of the housing market have direct positive impact on the social, political and economic well-being of any country. This is not peculiar to the advanced economies only but also the emerging economies. A robust housing market that provide affordable standard housing units will bring about economic growth by providing employment opportunities (5 jobs per house built, World Bank, 2015), infrastructural development, improve the quality of life and standard of living, fiscal balance, and from the Nigerian perspective, bring about a robust economy which does not depend on a single sector for its revenue generation. In addition to the above, Adams et al (2005) emphasized that the location of property development among cities and regions could enhance competitiveness among the cities, thus consequently being about reduction in cost of housing units and better social infrastructures with a view to encourage households to such regions.

Based on the importance of the housing market to the economy, policy makers are interested in making policies that can influence the performance of the market. This is because a good policy implementation has the dynamics to bring about the desired change. Adams et al (2005) emphasized that government include its governance strategies, policies that regulate the housing market through its planning system, "direct development channelled through the

land policy and regeneration creativities and the indirect influences on the behaviour of property institutions through taxation and fiscal mechanisms." These have a way to shape households' behaviour in term of the size, structure type and investment decisions they will embark upon.

This section will critically review the National development plans and housing policies in Nigeria, identified the achievements of each of the policies and major failures in its implementation. This is significant to this research because in other to identify the limiting factors, the role of policy implementation is critical. This is because policy failure could lead to inefficiency in the demand and supply side perspective of the housing market.

The heart of the most of the Nigeria's housing policy is a policy which emphasized national developmental ideologies and focused on social development, employment generation, regional development, and spatial distribution of population and localization of the industrial, commercial and agricultural activities (EFInA, 2010). In the history of Nigeria since independence in 1960, there has been a search for a strategic blueprint that will bring about development for the Nigeria state. Consequently, a series of development plans have been created and implemented but the country is yet to achieve its developmental agenda and the part of these policies relating to housing market will be considered.

It is worth mentioning that prior to the Nigeria independence in 1960, the first attempt made by the Government regarding massive housing provision was done to provide housing for British colonial masters, expatriate officials and Nigerians occupying strategic roles for the British imperial government. After Independence, there were conscious effort by the governments to make housing provision for the general masses neglected by the British colonial government. This led the first national development plan.

The First National Development Plan (1962 – 1968)

This plan was a deliberate action of the young government which just took over from the colonial government and have a big shoe to fill. A strategic platform to show that the indigenous government cared about its subjects and thus want to have a stable growth across all the sectors targeted at boosting the economy. This was a five-year national development plan which at the end of the plan, its aims and objectives should have been actualized. Agbola et al (2007) emphasized that this policy did not give much attention to mass housing delivery,

however, the focus was centred on the development of urban centres and country planning. The notable theme was the acquisition of land for the greater good and town planning which entrenched housing in it. The plan set out to produce 24,000 housing units at the end of its five-year life span. In term of housing unit delivery, only 500 units was completed by 1967 and nothing was done afterwards due to the outbreak of civil war between the eastern region and the rest of the country. If we take a critical look at this performance, it is inevitable that the 24,000 housing unit cannot be achieved given the fact that the plan had one year left to expire. Only 2.1 % was completed and considering that almost 50% of the budget for the project had been disbursed. In monetary terms almost N40 million was expended out of the N89 billion budgeted (EFInA, 2010). Ogwumike (1995) paper identified the major failure of the plan was inadequate funding. Half of the funds required for the project was expected to come from external sources and 14% was only received. In addition to this, the collapse of the first republic due to inexperience about governance and greed of the political class and in conjunction with the commencement of civil war led to the failure of the plan.

The Second National Development Plan (1970 – 1974)

This was post war reconstruction strategic plan for the government. This was deliberate plan to build on the first development plan which did not lift up to expectation. If we recall only 2% of the housing unit target was achieved. After the war, infrastructures were damaged, efforts were put into perspective to ensure those destroyed facilities where replaced with state of the heart facilities. The focus was urban expansion and regeneration of major cities and at the heart of this is housing unit delivery for the lower income group of the Nigerian society. The plan targeted the growth of urban centres and its expansion in cities such as Lagos, Ibadan, Kano, Port Harcourt, Enugu, Benin City and Kaduna (EFInA, 2010). The plan was set with a target of 60,000 housing units at the end of the plan, and the Federal Housing Authority (FHA) was established to manage and administer the supervision of the construction of the housing unit in 1973, this was four years after the plan had been set in motion. It is evidenced that the plan will not deliver its set target because the engine room for its implementation was established four years after the programme started and the agency is still saddled with the responsibility to deliver the supply of affordable housing units for Nigerians, even after the civil war.

Some notable tenets of this plan was that the Federal Government accepted housing as part

of its social and political duties, thus emphasizing social housing for the under privileged, construction and providing national wide of rent to own property scheme, increase the investment in production of local manufacturing of building materials, establish a public private arrangement to expand private housing.

The Third National Development Plan (1975 -1980)

This was created immediately after the expiration of the second national development plan. It provided a robust outlook to the Nigerian housing markets. The Government emphasized the role of housing to the well-being of the citizens and development of the economy and pursuant to this, a housing unit was established within the presidency. The policy established the Federal Mortgage Bank of Nigeria to oversee and administer the mortgage market and delivery of mass housing units, review the existing housing standards and types, rent control law and the land use act were passed. The land use act which established how land are used is still being used till date. The role of the federal housing authority was decentralised which enabled the state government to have direct involvement in term of housing delivery and infrastructural development. Since finance was the bane of the first and second national development, more funds were allocated to the housing sector. According to EFInA (2010), a total of N1.83 billion was disbursed to the Federal Ministry of Housing, National development and Environment for housing development which have the sole responsibility for the housing sector. Change in government can be attributed as the main setback of this policy. The outgoing military government did not have the political will to ensure it mandate of building 202,000 housing unit was achieved. Out of the set target, only 28,500 units was completed for the first four years of the plan.

The Fourth National Development Plan (1981 -1985)

This plan became necessary for the government in the second republic of civil rule in Nigeria. After a long time of military rule, the Obasanjo military administration handed over power to a democratically elected government on October 1st, 1979. The new government developmental plan encouraged the building of residential dwellings and an inclusion principle was pursued aggressively. Mobilization of funds for housing finance were sourced from all sources, provision of infrastructure facilities to ensure house building can be done effectively, emphasized rural development through rural development housing programme to

reduce rural urban drift. Like the other national development plans, the fourth national development plan impact on the housing sector in term of housing delivery was very minimal. A total of N1.6 billion was allocated to the housing sector and only 47, 200 units were completed (EFInA, 2010).

National Housing Policy (1991)

The background to this policy was the establishment of the Federal Mortgage Bank of Nigeria under the mortgage Institution act number 53 of 1989 with the responsibility of regulating and supervising the activities of the primary mortgage institutions. It is observed that for effective housing delivery to the lower income group, primary mortgage institution should be established which the households can easily access and the localized PMIs can risk assess them using information peculiar to their economic environment and sent forth their documentation for approval with the Federal Mortgage Bank. The strategy was to reduce exclusion and make many households access the mortgage market for the needed funds to buy their desired property.

This policy brought about a change in the structure of the housing market by emphasizing the availability and accessibility of land for housing development and urban regeneration and intensify the solutions to the issues identified from sourcing building materials at reasonable prices. Emphasis were on local content with a view to generate employment opportunities and boost the economic growth. In addition to this, the policy restructured the activities of the FMBN to a wholesale bank and PMIs and commercial bank (deposit money banks) to take active part in the mortgage market. Prior to now, enforce were focussed on the supply side of the housing market, no attention was given to the demand side and supply of funds (Mortgage finance) to the housing market. The impact of this on the housing market was that total loan amount created was N5.99 billion from 1992 to 2001 (EFInA, 2010) and the number of PMI increased significantly which means that many households that were excluded can now access the funds in the mortgage market.

In term of its overall objectives being met, the National housing policy 1991 general performance could be classified as below average, considering the amount of resources dedicated to the program. Despite the liberalization of the market, thus introducing commercial banks, merchant banks and insurance companies, and their active participation

in the mortgage market did not reveal any notable impact on the mortgage market. This is because Nigerian banks are interested in short term investment which returns can quickly be made between one to two years. A mortgage of thirty years may not bring such returns and no government guarantee in place.

On creating incentives for the capital market investment in the property development. Such incentive would have been a means to get long term funds at cheap cost which could have been a catalyst for the inadequate funds in the market. The 1991 housing policy did not create a platform on which this can function. And the Nigeria capital market is not well developed and with very low investors' confidence in the housing market, it did not succeed on this objective.

In addition to the above, limited successes were experienced on mobilization of savings for the mortgage institution, and sourcing funds from international agencies into the priority housing needs for the low-income households, and voluntary saving scheme, budgetary allocation from the state government to the housing finance system.

However, the only notable success story of this plan was the establishment and administration of the national housing funds managed by the Federal Mortgage Bank of Nigeria. This is a compulsory charge of 2.5% of the salaries of employee in the formal sector of the economy. This fund formed a crucial part of the household savings to buy their desired property. Also, the policy developed a strategic framework which strengthen institutions with the system proactive to the demand for housing unit. This was done by encouraging and emphasizing the housing investment for both domestic and foreign sources which increased private sector participation.

National Housing Programme (1994- 1995)

This programme was to further strengthen the National Housing Policy of 1991. This was designed to utilized funds given to finance the housing policy. Its main objective was to construct and deliver 121, 000 housing units for all income group. This programme emphasized that housing units should be constructed for low, middle- and high-income households in Nigeria. The priority was given to newly created states. The 9 new states were to have 5,000 housing units each and the other 21 states where distribute among each other. This was a deliberate action by the then military government to try to appease political

agitators and the citizens demanding for democratic rule. This is however, a policy mismatch because there is no housing shortage for the high income household who can afford any housing units they desired.

This failed because there was no direction of how many units to be constructed for each income group in each affected state. The selective process which focussed on the new states did not make the programme widely accepted by the Nation. The programme like the other failed, only 1,014 housing units were completed (EFInA, 2010). Less than 1% of the target was met in this instance.

National Housing Policy (2002)

The transition of Political power from the Military to democratically elected government in 1999 brought about a paradigm shift in the policy thrust especially in the housing sector. This was pursuant to the setting up of a presidential committee which comprises of experts and professional in the field of housing, financial and construction to come up with the third national housing policy. This was the first time in the Nigeria history where consultations were done before the actual document came into existence. The National Housing Policy 2002 become an official working document in 2006 and its implementation was saddled with the Federal Ministry of Lands, Housing and Urban Development. The significant contribution of the policy was to develop the mortgage finance market by increasing access to mortgage and eventually home ownership. In order to achieve this, the Federal Mortgage Bank of Nigeria (FMBN) was restructured to grant the long term funds needed in the mortgage market, housing supply chain components were enhanced such as improvement in the land use regulations, standardization of quality building, increase title registration process etc.

A critical contribution of this housing policy to increase household access to mortgage finance was through a reduction in interest rate on mortgage loans. The private developers and state housing corporations interest rate on loans granted was reduced for 15% to 10% per annum and individual household loans were also reduced from 9% to 6% per annum with a longer maturity period to 30 years to the previous tenor of 25 years (EFInA, 2010).

This National Housing Policy was redesigned as part of Vision 2020 in a document titled

Financial system strategy 2020 (FSS 2020). The Nigeria government believed that putting into perspective, if the potential of the country is effectively utilized, Nigeria should be the 20th largest economies in the World and thus consolidate its leadership position in Africa and establish itself globally. In order to achieve this objective, six drivers of the economy were identified which are: credit, SME Finance, Mortgage market, Capital Market, Insurance, Money and Foreign exchange. This shows the importance of the housing market to the development of the Nigeria economy.

In order to achieve this, the government realised that the housing sector contribution cannot be overemphasized. As part of FSS 2020, one of the objectives was to create a conducive regulatory environment for housing finance in which the private and public sector can effectively participate (Barau, 2010).

In order to develop a robust financial architect that can support the mortgage market, banking reforms was carried out under four streams to create a sustainable financial system. They are: enhancing the quality of banks, strengthening financial stability, enabling health financial sector evolution, ensuring financial sector contribution to real economy.

According to this programme, at the end of it in 2020 it is estimated that over 10 million housing unit would have been built (EFInA, 2010). It is obvious that the program is still on going, however, there is no visible impact on delivery of the housing units now, maybe in the next three years.

There are a lot of problems identified has the causal factors the developmental and housing policies in Nigeria as not delivered the desired results and which created a massive housing deficit of between 17 to 20 million units. They are:

- Minimal involvement of the Executive in the formulation and implementation of the development plans.

- There were little or no public consultation before drafting the plans

- Lack of good governance

- Bad Leadership

- Lack of continuity by the previous government policies

- High Level of Corruption and Indiscipline

- Mono-economic nature of the Nigeria economy

- Reliance of external sources of funds to execute the development plan.

Based on the discussions above, it is obvious that developmental and housing policies implementation is huge constraints in Nigeria. Most of the housing development plans are very brilliant on paper, however, Nigeria government have not been able to actualize these plans. A culture of policy continuity when there is a change in Government should be encouraged.

5.6 The Nigeria housing and the financial market

It is a known fact that finance is the heart of any mortgage market. Without finance, it cannot function at all. The financial market is an intermediary in which those with the surplus fund can save those funds and those with limited fund can approach the financial institution to obtain the required finances to consume their desired consumption bundles. The ability of the financial Institutions particularly Banks in an emerging economy to meet up with the household demand for the long-term finance like mortgage finance is critical to the performance of the mortgage finance in such an economy. The role of the Nigeria Financial system in the mortgage market is important and its role, contributions will be critically reviewed in this section.

5.6.1 Structure of Sources of Finance in the Nigeria Mortgage Market

The discussion of this section will critically examine the structure of the sources of finance in the mortgage market. The source of finance can be of two types:

- Formal source of Finance

- Informal Source of Finance

The household desired property can be acquired through the two sources above especially in the emerging economies like Nigeria.

The formal source of finance is when households can access and get mortgages from financial institution such as commercial Bank, merchant Bank and the Federal Mortgage Bank of Nigeria (Subsidized mortgages). Strict documentations and conditions are set for households that

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want to access this source of finances which limit the number of the households that get these mortgages. These are very expensive to maintain for the low-Income group of the society.

The Informal sources of finance in the Mortgage market are: loans from friends, loans from families, savings, community effort, cooperative society loans. These are sources are very cheap with very little or no interest payment on such loans. However, there are usually for a very short duration. The ability of the households to access large amount to buy their desired properties are not guaranteed. Most households in Nigeria result to this source of finance to acquire or supplement their building or build incrementally. This is the reason why this research wants to critically understand the limiting factors that could prevent the households from accessing long-term mortgage finance needed to acquire their desired property.

5.7 Nigeria Financial Institutions

The Nigeria financial system is made up of banks and non-banking financial institutions. The non-bank or quasi bank institutions are institutions which do not have the full banking licence to operate and are not regulated by the Central Bank. This also includes government agencies, Insurance companies and pension funds. In the Nigeria context, the followings are the summary of Financial Institution available in Nigeria and are involved in the mortgage market directly or indirectly. The various relationships of these institutions with the mortgage market will be discussed below.

Table 5.1 Financial Institutions in Nigeria as at December 1st, 2019

Financial Institution by Type	Number
Commercial Banks	21
Merchant Bank	5
Micro Finance Banks	1024
Primary Mortgage Institutions	36
Development Banks	6
Financial Companies	65
Non-Interest Bank	1
Insurance Companies	58
Pension Fund Administrators	21

Sources: CBN, NAICOM, PENCOM (Accessed on Dec 1st, 2019).

5.7.1 Commercial Banks

Commercial Banks in Nigeria is the hub of the financial institution in Nigeria. It provides basic-to-complex financial services to the public including business which provides the needed finances for businesses and thus, sustain the growth of the economy in general. Boleat and Walley (2008) emphasized that the commercial banks in Nigeria economy account for the over 90 % of the asset base in the country, the financial health and soundness of these institutions are treated with the utmost importance. The activities of these institutions and other deposit taking institutions are under the supervision and control of the Central Bank of Nigeria.

In 2005, the capital base (Legal reserves) of the commercial bank was raised from N2 billion to N25 billion. The increase in the capital requirement was a critical factor that restructured the financial institutions in Nigeria. As a result, Banks merged, raised more capital from the capital market, weak banks were acquired. This led the number of banks to reduce from 89 to 24. It was believed that financially strong bank will bring out a significant change in the performance of the economy particularly the long-term fund needed in the mortgage market. Boleat and Walley (2008) emphasized that despite the consolidation exercise, the Nigerian Banking sector remained relatively fragmented and its lack diversity in its ownership composition. It revealed that 95% of the Banks have local ownership. The lack of diversity in its capital structure means it will be difficult to attract cheap foreign capital into the bank to augment its financial position. Stanbic and Standard Chartered Banks are originally a South Africa bank are the only the foreign banks operating in Nigeria. Others with partial ownership with foreign banks are Nigeria International Bank which 83% is owed by Citibank and 72% of Ecobank is owed by Ecobank Transnational based in Togo. FMBN is the well-established privately-owned bank in Nigeria. The largest banks in Nigeria are: First Bank, GTBank, Zenith Bank, UBA, Ecobank, Stanbic IBTC, Access Bank and Union Bank. Most of the big-ticket transactions are consummated from these banks. Customers can do business in any currencies anywhere in the World. Branches are opened in the industrial capital of the world like London and United States of America. It is assumed that banks are very liquid in Nigeria. However, retail lending is tiny which made up 15% of the total loans. Due to the non-banking culture it was estimated that less than 1 % of the total population have bank credit facilities (Boleat and Walley, 2008).

IMF submission on the Nigerian banking sector was that they are broadly stable, well

capitalized, liquid and profitable. Despite the crisis before the consolidation which brought an end to unsound and marginal performing banks and consequent of the bank recapitalization, this resulted into systemic doubling of their balance sheet. The robust capital base was instrumental to how the sector was able to weather the storm when the banking crisis of 2009 ensued. In addition, weaker banks were bailed out by the Central Bank to turn of N620 billion, as a result of a buoyant economy. This brought confidence back to the public about the safety of their deposit. There is a close relationship that exist between the performance of banks and the mortgage market. A profitable bank should have the capacity to grant the long-term funds needed in the mortgage market. Despite the improvement in banks performance in Nigeria, its new capital-based increment was directed to branch expansion, IT infrastructural development and thus, not keen about the long-term finances needed in the mortgage market. The banks make short tenor transactions and their priority is to make quick turnover and payback the profit. EFInA (2010) emphasized that only 4 out of the commercial banks in Nigeria are actively involved in the mortgage market.

5.7.2 Merchant Bank

As at December 2016, there are five merchant banks in Nigeria. They are Altitude Microfinance Bank Limited, Coronation Merchant Bank Limited, FBN Merchant Bank, FSDH Merchant Bank Limited, and Rand Merchant Bank Nigeria Limited. They focus on investment banking and have a specific target market which financing activities includes augmenting working capital for businesses, providing trade solution, cash management and security trading. In relation to the mortgage and housing markets, the merchant banks have the technicality to package real estate investment trust and enhance the long-term investment needed in the market. However, merchant banks have done very little in this respect, only three of REIT have been issued. Just like the commercial banks, they focus on short-term big-ticket transactions which the real estate sector is not.

5.7.3 Micro Finance

As at December 2019, a total of 1024 community banks exist in Nigeria. These are institutions localized which the main business objectives are to receive savings and lending to members of the community where its located. It is a local bank for the local community. In order to organise and increase their capacity to performance its functions to the local community, the CBN require them to increase their capital base to N20 million for those at the state level and N1 billion for those that operate at the national level.

Boleat and Walley (2008) emphasized that it seems the institutions are very liquid and despite its community-based functions, it does not play any significant role in the mortgage market. However, micro finance bank should play an important role in the lending for incremental construction which could be make significant contribution for the low-income group. World Bank group (2016) emphasized that housing sector in sub-Sahara Africa could be developed if there is housing micro finance functioning to its full potentials.

5.7.4 Primary Mortgage Institutions

These are institutions set up specifically to originate mortgage loans for households that are interested in buying their desired properties. They take savings for potential households and operate their mortgage accounts. The main role of PMIs is to distribute the subsidized loans that is financed through the National Housing Trust Fund (NHTF). Boleat and Walley (2008) emphasized that they are weak and not adequately capitalized and mostly limited to collection of deposit. Consequently, they could not originate loans and thus increase the back log of applications. The CBN raised the minimum capital requirement for the PMIs, N5 billion was set for the National PMB and N2.5 billion for the State PMBs. It should be noted that 36 PMB licensed by the CBN after the conclusion of the exercise in 2015. 10 of them met the requirement for the national category and the others the state. Bolaet and Walley (2008) emphasized that most of the largest PMIs are subsidiaries of commercial banks or have direct link with a bank or Financial Institution. This evidenced that Nigerian Banks are separating the business of mortgage finance from the daily banking business and those PMI could have the same ideology as the banks, of not committing to the development of the mortgage market. The PMI contribution to the mortgage market is very minimal, only 20,995 loans were granted (CBN, 2015), however, after the recapitalisation, the situation should improve significantly.

5.7.5 Development Finance Institutions

These are institutions that engage in development of key sectors in the Nigerian economy. For example, the Bank of Industry and the Urban Development Bank of Nigeria Plc. These institutions are established to grant long term funds to sectors such as industrial, commercial, agricultural, infrastructural and housing sector development. EFInA (2010) paper emphasized that these institutions mainly focussed on industrial, agricultural and infrastructural sectors and the housing sector was totally neglected. Despite the privatisation of the Banks, very little

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are done regarding the housing and mortgage markets.

5.7.6 Non-Interest Bank

This is a new development in the Nigeria Financial system. The only non-interest-bearing bank in Nigeria is Jaiz Bank Plc, which was established by a special purpose vehicle set up in 2003. Though it is unquoted, it is owned by over 3000 shareholders across the six geo-political regions in Nigeria (Jaiz Bank, 2018). The institution offers banking services like the conventional banks, the main difference is that the bank does not give or receive interest and does not finance products that are regarded as dangerous to society. For instance, alcohol, tobacco, gambling. In addition to these, are anything that involves speculation, uncertainty and deception. This bank services are predominantly demanded by people based on their religious ideology. The Bank obtained its National license in 2012 with three branches in Abuja FCT, Kaduna and Kano. Most of the citizens are yet to feel its impacts in terms of their lending capacity. With just three branches network, it is a community bank which contribution to the mortgage market is yet to be materialized. The Bank should develop products for the mortgage market and incorporate the National Housing goal as one of its objectives, if it will bring about the change in the mortgage market.

5.7.7 Insurance Companies

Insurance companies are sources of long-term funds which could be channel into the mortgage and housing market. For instance, long-term savings such as annuities and endowment policies which are life fund savings can be available funds which could be invested in long-term capital assets like real estate investments. Just like the banking sector, minimum capital of the insurance sector was also raised in 2007. Consequent of this, the sector is buoyant and does have the capacity to invest their funds in long term capital assets. Based on the annual accounts of NAICOM of 2011, it revealed a total insurance business investment in real estate and mortgage to be turn of N1.15 billion. It should be emphasized that mortgage loans granted are usually to the co-operative society of multi-national companies in Nigeria. It does not directly deal with different households.

5.7.8 Pension Fund Administrators

PFAs are institutions with collect funds in form of savings throughout the working life of employee of any business and the employers also contributes towards its employee retirement. This give the PFA a pool of funds which will not be collected until the employee retires at age of 60. And as a result, the PFA are in an advantage position to effectively

participate in the mortgage market. As at June 2016, the pension fund's assets under management is about N213 billion (CBN, 2017). This is an indication that the PFA can increase their contributions to the housing sector if there are appropriate policies to channel the funds to the right channels.

5.7.9   Nigeria Refinance Mortgage Company.

This was set up in June 2013 with the aim of developing the primary and secondary mortgage markets by raising the needed long-term funds from the domestic capital market and foreign markets with a view to providing the access and affordable housing for the low-income group in the country. In order to achieve its objective of removing barriers to home ownership, providing the needed liquidity in the market, providing cheap and affordable housing which will create stability in the housing market in Nigeria (NMRC, 2016), a uniform mortgage loan underwriting standards was introduced which mortgage institutions have to adhere to if their mortgages are to be refinanced. This will ensure all mortgages have the same standards which will mitigate against the legal and operational, mortgage financial risk which are prominent in the Nigeria mortgage market. These features should ensure quality collateralization of the asset, proper titling which will make enforcement and recovery of properties easy and efficient, and efficiency in the collection procedures. The projection of the institution is to refinance up to 400,000 mortgages in the next 5 years and bring liquidity to the market through bond issuance of N10 billion with government guarantee which enable the institution to borrow at the sovereign rate which will make it easier to lend to the households. The refinancing activities will basically increase the tenor of mortgages between 25 to 30 years at lower interest rate. The institution introduced foreclosure law which 21 states have signed on, which is basically signing up to the arbitration law which will make foreclosure easier process. The NMRC emphasized the role of the developers to create the housing stock, creating a suitable market to ensure funds are providing to build cheap and affordable housing unit which will be within the reach of the low-income group. A programme is put together to organise the developers to a compatible unit which should ensure an effective and easy transmission mechanism between the financiers and developers.

The World Bank is of the opinion that this institution will transform the Nigeria mortgage market, as it was experienced in Malaysia and Indonesia through providing the long term needed liquidity in the market. The Housing Finance programme initiation of World Bank of

$300 million will bring about great improvement and liquidity to the market as well.

Though the institution is still very young, and its structure is still being worked out, this research is of the view that ability of this institution to bring about the catalyst in the mortgage market is huge if it has ability to attract the long-term liquidity needed in the market.

5.8   The informal Sector Finance

Having critically investigated the roles and structure of the formal sources of finance in the mortgage market, it is important to examine the informal sources of finance available in the mortgage market. This is because 85% of the economy are involved in the informal sector (Boleat and Simeon, 2008) and Nubi (2005) studies emphasized that a good investigation into the informal sources of finance should identify operational issues and such could offer insights into solving the problem of the formal finance system in the Nigeria context. This is peculiar because access to formal market is mainly restricted to the low income and middle-income households.

Macoloo (1994) studies based on an emerging economy identified two main sources of finance in the informal sector, which could be from cash and kind when a household in a community is interested in owner occupation. In this instance, members of a community pool their resources together to support their members that needs such help to get their desired property within their capacity. He emphasised that cash assistance is more pronounced in the urban centres while the kind assistance is mainly common in the rural-agro based communities where farming activities are predominant.

The cash assistance is in form of the rotating saving and credit scheme where members contributes a fixed amount monthly for each member of the group and every member will have their turn. This scheme is called Esusu or Isusu in Nigeria. This is a cheap source of finance because there is no strict paper documentation involved and no interest rate is charged.

Family support has been identified as an important informal source of finance. Parents obligations on their children are unrestricted in Nigeria and their wellbeing is paramount including climbing the property ladder. This could be done by donation/gift funds needed for the deposit for a property. In some cases, the parents could arrange for a guarantor and where the parents are rich, wealth could be transferred in form of intergenerational wealth transfer which will ease the access to the mortgage market.

Nubi (1996) studies expressed another critical factor which encouraged that the informal sector source of finance in the Nigeria housing market is the adoption of the third-party guarantee as a suitable collateral for a cash transaction. This guarantee is put in place to serve as a cushion if the households does not make good their promises after collecting their contributions. In addition to this is the peer pressure to collect outstanding payments from defaulters and the potential loss of future borrowing if the initial contributions are not paid back. These safety nets have prevented the default risk, meeting the affordability criteria and provision of collaterals for the borrowings which are necessary conditions for households that want to access a mortgage from the formal financial markets. However, the third-party guarantee may be difficult to enforce, and such is usually based on trust.

The informal source of finance support the gradual or incremental construction of property in Nigeria is more prominent because most households does not have a suitable and adequate collateral to secure a mortgage, small tranche are given out which the member can pay back, transaction cost are reduced to lowest because information about the borrowing households are known to members of the community, cost of maintenance is very cheap since there is no reserve requirement to be met unlike the formal sector.

Christian (1993) and Nubi (1996) studies confirmed that there is a direct linkage that exist between the formal sources of finances and the informal sources of finance. This is because those groups that can borrow from the formal financial market and re-lend it to the households in the informal markets. However, a critical investigation revealed that those households in the informal sector, due to their lack of a regular monthly income which is a perquisite for getting mortgages in the Nigeria context from a cooperative society. These societies are well structured and are registered with the government and in some cases do have government guarantee which gives the financial institutions ability to lend to them at cheaper rate. The households in the informal sector through their cooperative society can now access the needed funds in the mortgage market. The transmission mechanism was made possible through housing and developmental policy of Government. This made it imperative to critically investigate how public policies on housing and development have done in ensuring the low-income group of the society have access to cheap and affordable housing which they can afford.

Based on the established interconnection between the formal and informal market for

mortgage finance, Nubi (1996) emphasized that households respond to changes that occurs in both markets. For instance, if there are changes to interest rates, domestic credit ceilings and inflation rate such will be transmitted to the households in the informal market. Consequently, it may be more expensive for households to get suitable mortgage products to enable them to access the mortgage market.

It has been argued that policy response to the formal sector should be developed in such a way to control the development of the informal financial sector. This is because the informal economy is predominant in the Nigeria context. Nubi (1996) emphasized three broad policy directions to ensure the above is achieved, which are: implementation of adequate monetary policy, institutional and regulatory reforms targeted at sound and health financial system and a stable interest rate.

In summary, this section emphasized the dominance of the informal sector in the economy and established the critical role the formal sector plays in the mortgage market. An important point to note here is the established link between the formal financial market and informal sector and the transmission mechanism which ensure household access to the finance needed to acquire their desired property.

5.9 Appraisal of the Nigerian Financial Institution.

The section critically evaluates the performance of Nigeria financial institutions in the mortgage finance and its structure which have a significant impact on the performance of the mortgage market in Nigeria in term of their ability to grant the long-term funds needed in the market. This is because the ability of the households to access long and cheap sources of funds will determine the success of the mortgage market.

The discussion and evaluation of the Nigeria financial institutions is its financial intermediation role, this section draws on theoretical arguments from microeconomics of banking, micro foundations of finance and financial economics and examine their implications for bank behaviour in the Nigerian context and emphasize the role of high lending rates which is an important factor when considering the affordability criteria for households.

The theoretical perspective of the financial market is based on the assumption that the market function perfectly which assumed that households demand more funds when the prices fall and less when prices rises, thus creating a downward sloping demand curve and mortgage

lenders are willing to sell more at higher prices and reduce the supply of funds when the prices are considered very low, thus creating an upward sloping supply curve. This will bring out a situation that will clear the market where borrowers of funds and mortgage lenders will reach an equilibrium price.

However, in the real world of imperfection, such may not follow the theoretical predictions, if the market is a seller market, particularly the Nigerian mortgage market. This is due to different reaction to policy instruments and shocks of which the financial market is no exception, thus, financial market relationship between the households and mortgage lenders when not properly defined will not follow the traditional theoretical framework.

In Nigeria, the lending rate is considered very high not only in the mortgage market but to other productive sectors in the economy such as agriculture, manufacturing, small and medium enterprises. The performance of the mortgage market is greatly affected by this, considering lending rate as high as 30% which made purchase of properties through mortgage out of the reach of the low income group of the society, such created affordability problem when more than 50 % of the population live on less than two dollars daily.

An investigation of the classification of the Nigerian banks revealed three visible class of banks in Nigeria. This is important to this research in term of the economies of scale, economies of scope, branch network and asset base have a significant influence if the banks will be able to grant the long-term finance needed in the mortgage market.

The first-generation banks in Nigeria are made up of the largest six banks, namely, Zenith Bank, First Bank, United Bank for Africa, Guaranty Trust Bank, Access Bank and FCMB. In term of their asset's portfolio, it accounts for almost 50% of the bank wide assets put together. The first-tier banks are characterised with over 300 branches within Nigeria and many branch networks across the world, cutting edge technology, large balance sheet size, market-based activities, organisational complexity. In addition, it enjoys economies of scale which allows better diversification and operate on different market segment (Laeven, 2014). Based on the size, they should be able to grant the long term funds needed in the mortgage market and Oshikoya (2015) emphasized that the cost of fund is relatively lower in the first tier bank which implies that the mortgage rate charged will be within the reach for the low income group and thus enhance the affordability criteria for the household in the Nigeria.

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The second-generation banks group are majorly licenced to carry out banking at the National level. This implies that they have authorisation to do banking business throughout the Nigeria and this category is made up of six banks. In term of their capitalisation, it is less than the first tier and the bank's ability to grant the long-term finances needed in the mortgage market is in doubt. This is because most of the loans are short term in nature (Five-year tenor) thus, decreasing their loans-to-assets ratio.

The other banks at the bottom are the third generation Banks. These banks are comprising of the foreign-owned banks the few branches outlet to serve their nationals interest in Nigeria and the local banks in this category are considered small in term of their balance sheet size and portfolios. Most of the loans are short term (one months to four years) in nature in other to make quick returns to cover their overheads.

A critical investigation of dataset from CBN (2015), World Bank, (2016) revealed that on the average, savings deposits rate of all banks in Nigeria is around 9.1%, this reflects the average cost of funds. However, this is higher in the 3rd tier banks', which implies that the cost of funds is higher and consequently on the fact that rely on fixed deposits, government accounts and short-term transactions for quick turnover. This research has identified that third generation banks in Nigeria could not support to finance the long-term finance needed in the mortgage market due to their financial strength and capacity.

The significant difference in the lending rates across the Banks in Nigeria is a major constraint of the performance of the mortgage market. A quick review of the lending rating among deposit money banks (DMB) revealed that the average prime lending rates in the industry is 17% to 27 % and the common with the first-generation banks (Big banks). The situation is not the same for the other two categories of Banks. For instance, there are 20% to 30% for the second-generation banks and 27% to 37% for the third-generation bank. These made most of the households who cannot meet the lending criteria of the first-generation banks to be completely rationed and since none of the financial institutions are not into long term credit like the mortgage finance.

Oshikoya (2015) emphasized that the Nigeria financial system is a direct reflection of the high cost of funds and high cost of doing business which is a result of low deposit rate resulting from high dollarization, and as a results of lack of economies of scale, economies of scope,

network externalities and the appetite of higher returns on short tenor finances. This is peculiar to the third-generation banks. In other to cover their business expense, the drive for higher returns always invigorated by the higher risk appetite.

Theoretically, this higher return appetite by Banks will reduce the ability of the lower income and genuine households' ability to get a mortgage finance. This is because banks may not have the complete information about the households applying for the mortgage and their judgment is based on the information given to the bank for assessments and if the household could pay the initial premium, that will influence their judgment. However, those households may not be able to afford paying the monthly payment and such loans may be delinquent, deteriorate the bank's asset and may lead to bankruptcy. For instance, the financial crisis in 2007-08 was a direct result of this where banks were heavily exposed due the sub-prime mortgage lending.

High interest rate is a major constraint on the mortgage market and in the Nigeria financial market, it has always been double digits. Oshikoya (2015) emphasized that the prime rate from the first-generation banks shows the true position of the optimal lending rates considering the current inflation rate and Monetary Policy Rate (MPR). This implies that as the inflation rate increases, so also will interest rate which will be used to cover the cost of funds which includes time deposits rates, saving deposits rate and operating cost which are 10 %, 5% and 5% respectively. Alternatively, the prime rate of 15% is the sum of the MPR (12%), which is set above inflation rate, plus the mark up for operating costs of 3 to 4%.

If the financial institution is to improve the performance in the mortgage market and if a prime rate of single digit is to be achieved, then a strategy to reduce the components should be pursued. For instance, a reduced inflation rate should ensure a reduced fiscal dominance of monetary space and consequently such will reduce the MPR and the cost of operations. In addition to this, is the difference in points between the prime rate and maximum rate. A high gap between the prime rates and maximum lending rate in the financial sector could reflect a deliberate approach to signal and screen where the low rates are applied to the high net worth households and the maximum rates are for the low-income members of the society. This behaviour is common among the first-generation banks in Nigeria, however, the second and third generation banks rely on those low-income households for business survival, but they don't play significant role in the mortgage market.

The impact of competition in the Banking sector is also considered as a contributory factor to the ability of Banks granting the long-term credit needed in the Mortgage market. The Nigeria banking sector is characterised as a competitive industry where there are large number of small banks where each of the banks tries to out play each other to capturing a segment of the market and make quick returns (Freixas and Rochet (1997), CBN, (2013). Theoretically, a perfect competitive banking market have been described as a maximizing price-takers which maximize profit and minimize costs as well as prices. When applied to the mortgage market, banks can supply the needed funds at a low interest rate and thus, ensuring that the low - income groups demand for mortgage finance are met and there is welfare maximization.

However, in term of the mortgage market, the banking sector evidenced a concentrated market where market power exists. The situation of market power in the banking sector will enable the banks to reduce supply of credit, rationing the low income groups and able to charge a price above marginal cost for profit (Freixas and Rochet (1997), CBN, (2013) and preventing the entry of other plays into the market because of their market size, economies of scales and scope, and externalities.

Oshikoya (2015) studies suggested in some quarters particularly in the mortgage market that banks in Nigeria are over-concentrated and emphasized that breaking up the larger banks (first generation banks) and encouraging more banks to enter the market will improve efficiency, stability and reduce interest rates in the market. However, there is no empirical evidence to back up this argument, but the Nigeria financial market is peculiar in nature and theoretical arguments explained above may not come out as predicted by theory.

Datasets from CBN (2015) evidenced the present of concentration in the Nigeria banking sector, six of the twenty-one Deposit Money Banks (DMBs) dominate the Nigerian banking industry when you consider their deposits and asset base, with market share of 58 per cent and 60 per cent respectively.

The oligopolistic nature of the financial institution prevents the development of the mortgage market. This enables the big banks to dominate the pricing and the direction of the lending in the market. However, in other to improve on this structural problem, a capital restructuring programme was introduced (2004 bank consolidation programme) which was targeted at strengthening banks with adequate capital base to finance capital intensive projects and thus

ensuring operational efficiency which will reduce cost. However, the recapitalization exercise did not improve the access to and pricing of mortgage loans, issues such as the information asymmetry, adverse selection, moral hazard, backward bending supply curve of credits, and mismatch between short term deposits and long term assets have prevented the effectiveness of the programme.

In the Nigeria context, mortgage market needs long-term financing at low interest rate preferably a single digit lending rates, compared to current short-term credits provided at very high rates. The Central Bank of Nigeria (2015) financial figures revealed that credit maturing within one-year accounts for 75% of total credits; those maturing within three years is less than 15% and five years and more was less than 10% and more than ten years was less than 2%.

In summary, due to the structure of the Nigeria financial system which lending credit is still at the rudimentary stage, financial institutions particularly banks use high lending rates as a mechanism to signal and screen households in the mortgage market, and thus intensifying rationing. Furthermore, due to assets mismatch, some commercial banks may not be keen on engaging in the mortgage market due to the long-term tenure of the product at single digit lending rates which should be more appropriate for the low-income households in the society.

5.10   Regional influence and impact on the Nigeria Mortgage Market.

Due to the multi-cultural dimension of the Nigeria state, various cultural influences and factors prevalent at the various regional level have a significant influence on the consumption patterns and demand activities of the households living in such regions. The section will critically analyse such factors and how those characteristics impact on the mortgage market.

Nigeria north-south divide was made prominent during the period of British rule which established an indirect rule principle to govern the Northern part of Nigeria where the Emir took administrative control of their people and hence get instructions from the British governor general. However, in the south, it was different. British Governor directly rule the citizen through British common laws.

The impact of this on the subject matter is that orientation about the people in these regions are different. For instance, the South part of Nigeria were governed by the laws. It was established that the laws of the land are supreme, and Its citizens were taught to obey

authorities while the North part of Nigeria answered to the Emir who determine what is good for his people according to Islamic laws called sharia law. This is a foundational shift which shaped the household behaviour to the mortgage market and other factors that could influence the demand for mortgage finance such as Education, family size, occupations, working arrangements (If one or two partners working), reaction to mortgage interest rate, mortgage debt.

The north south divide is categorised into six geo-political zones divided along political and geographical arrangements. However, such arrangement mainly did not consider the attributes and characteristics which may not be significant to this research. The zones are North West, North east and North central for the Northern region. And the south is divided into south west, south east and south-south regions.

The multi facet nature of Nigeria society revealed that it has over 500 ethnic groups with different languages, culture, custom and traditions making Nigeria to be one of the richest ethnic diversities in the World. Such diversities will have peculiar characteristics such as taste and preference that influence their consumption and life choice preferences. In this context the focus will be on the largest ethnic groups in Nigeria which are Hausa/Fulani, Yoruba and Igbo which accounts for more than 70% of the entire population. The northern part is predominantly Hausa/Fulani region and the south on the other hand is for the Yorubas and Igbos.

5.10.1 The North- South Divide.

The section identified peculiar characteristics in this region and how such could influence/impact the mortgage market such as Education, religion, migration, culture, institution influences, family size, population growth, crime, demography, family interrelationship, occupation, Income, dwelling characteristics. The following will form the basis for the critical evaluation of how these identified characteristics influence their demand for housing and mortgage needed for their desired properties.

Education

Historically, the southern part of Nigeria, educational system developed rapidly taking after the British educational system. For instance, a campus of University of London was established in Ibadan, Oyo State. What that implies is that Households in the Southern part of Nigeria are

well educated, and which translate to better paying jobs and higher income. It has been established that where there is an intensive investment in Educational development, there are usually a booming property market. This is because highly educated households should be financially buoyant to access the finances needed to acquire their desired properties. A good example is the UK economy where the property market contributes more than 70 % of GDP. In Nigeria, most of the investment in education are in the southern part of Nigeria, for instance, out of the 116 Universities in Nigeria, only 30 of them are situated in the Northern part of Nigeria and out of this, five Universities are in the Federal capital territory, Abuja. This simply implies that in term of financial capacity in accessing the mortgage market and creating suitable accommodation which can be purchased the southern part is the most suitable.

Income Distribution

The demographic and Health Survey of the Income and Wealth distribution of Nigeria (2013) critically investigated the income distribution and it divided the country into five income quintile which ranged from the highest income quintile to the lowest income group. It revealed that out of the Urban residence, 75% are in the highest and fourth income quintile, of which 43.3% are in the highest income group. The situation is different for the rural households which 60% fall below the lowest and second income quintile. Based on this income distribution, this research is of the view that the rural household may find it difficult to access the mortgage market based on their current income and with the current situation it may not be up to the affordability threshold set by financial institutions in Nigeria.

Regionally, income distribution of the six geo-political zone clearly show the north-south divide. The southern region (South East, South West and South South) were economically and financially buoyant which revealed that 56.7% to 78.3% of the population are in the highest and fourth Income quintile, particularly, the south west which 50% of its population in the highest income quintile. The Northern Nigeria is sharp contrast, more than half of the population are in the lowest income quintile. The North East and North West are the most prominent with 40% and 35.4 % of the population in the lowest income quintile. The current Income level will be a barrier for residence in such regions in accessing cheap funds to purchase their desired properties.

Religion

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Southern Nigeria households are mainly Christian by religion. Religious belief has the capacity to shape people behaviour and way of life. According to the religion perspective, the bible does not have anything against households working to earn a living and such can borrow against such future consumption. The Christianity perspective emphasized the significance of private property to freedom and personal development and as such should follow a natural order. That simply implies that every household should normally get one, either outright purchase or borrowing to pay back in the future. In addition to this, the Christianity perspective beliefs that everything God created is for the benefit of all and no individual should be excluded, and this include property right. Based on this religious belief, Christian faithful's in Southern Nigeria can pursue their right to descent property and use financial market to achieve these desires. This evidence that more than 60% of the total mortgage portfolio are in the southern Nigeria.

The Northern Nigeria is a different scenario, this is because they are predominantly Muslims and they believe that you can acquire private property through legal means, however, the Islamic religious believed that you should acquire a property through the financial market but without paying any interest elements. That implies that you can acquire a property from the mortgage market so far, the mortgage interest and other fees are not charged on the transaction. However, due to the less development in this area of the market in the Nigeria context, this research argued that such could impact on the performance of the Nigeria mortgage market particularly in the Northern Nigeria where Muslims belief in this doctrine.

Family Size

In addition to the above, family size varies across the regions in Nigeria. Average Nigeria is polygamous in nature. That is, they have likelihood to have a large family. The larger the family, the bigger property and such should increase the demand for mortgage finance. However, in the modern era, with civilization through the western influence and religious doctrine of Christian, most households that have embraced this, have maintained a nuclear family. However, when compared with the Northern part which believes, and religious doctrine which emphasized that a man is entitled to four wives. Such a customs and religion will encourage households to have a large family which will increase the intensity of the demand for housing and mortgage finance, provided finance is required for such purpose.

This have reflected in the population figures of Northern Nigeria compared to the Southern Nigeria. Currently the number of new-born babies are now more in the Northern Nigeria. The increase in the population of Nigeria is worrisome, given the 3% annually growth rate. According to the Demographic and Health Survey (2013), the total fertility rate in Northern Nigeria from 2003 to 2013 was 6.45 compared to the southern part of Nigeria which was 4.49, thus showing the number of times it is likely that a woman will give birth during her lifetime.

Political Affiliation and Association

The Political landscape in Nigeria since Independence from Britain in 1960 has been a critical determinant limiting the growth and development of the Nigeria housing market. Most times the political ideology is basically divided between the far right with capitalist view and far left with the socialist perspective. The central government are always formed from by the far-right political group mainly from the Northern part of Nigeria while the southern part embraced the socialist views. The difference in political ideology between the south and north widens the divide. For instance, the Southern state believe that housing should be provided for all even if those households cannot afford them and various measures are put in place for households to acquire such properties such live to acquire and the monetization exercise through government guarantee which allowed civil servants to buy their properties and pay it later. The difference in manifesto as put a constraint on the demand for housing particularly in the Northern Nigeria which does not encourage households to buy their property after many years of rental payment.

Infrastructural Development

Demand for suitable property will be influenced mainly by the development of adequate infrastructural facilities. This is because every households wants a certain level of comforts in or near their place of residence. This is evidenced in the UK economy because of the high standard of infrastructural development, demand for residential property is always high and every household is making effort to climb on the property ladder. In the Nigeria context, the infrastructure state is poor, however, the southern part of Nigeria is far best to the Northern Nigeria. For instance, Lagos is the financial hub of West Africa, which is among the most expensive in Africa. Most of the mortgages created in Nigeria are mainly in the southern part which basically evidenced the role infrastructural facilities play in the demand for housing

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units.

Strife and Sectarian Violence

Due to the diverse nature of the Nigerian state, various ethnic group always want to claim dominance and superiority over the ethnic groups which sectarian tension, violence and agitations are common. This is prominent in the oil producing Niger Delta region (Southern Nigeria) where groups of people are trying to take control of the verse regional petroleum resources. Also, in the Northern part of Nigeria, particularly in the North East region, the sect of Islamic fundamentalist that are against formal education and secular government have unleashed unrest on the citizens living in those areas. Such scale of violence will not encourage the demand for mortgage and housing. The impact of this on life and properties is so devastating than the level of destruction which the country last experienced during the civil war of 1967.

The regional differences perspective is critical to the research, if a robust approach is to be given to the constraints and limiting factors in the Nigeria mortgage market. The understanding of the regional prevalent characteristics and determinants of the housing market is very important to proffer solution to the market. And this research will ensure that suitable solutions peculiar to each region are enumerated.

5.11   Summary of synthesised literatures.

Based on the literatures, this research has identified five factors/key constraints that influences the accessing of mortgage finance in Nigeria, whether from the demand side or the supply side. This section diagnostic context will particularly influence the empirical estimation of this research. The approach here is to give a quick summary of each of the factors/constraints and thus, setting the pace for the empirical determination of the factors considered for the adoption of the theoretical models. The followings are the clear divisions and critical examination how those impede the households' ability to obtain long term borrowings needed in the mortgage market.

a) Macroeconomic challenges

b) Policy and regulatory challenges

c) Institutional challenges

d) Financial sector challenges

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e) Housing sector challenges

5.11.1 Macroeconomic challenges

The access to mortgage finance in any economy is dependent on the performance of macro economy. Thus, a stable and vibrant economy enhance economic activities which will have a positive influence on the access to mortgage finance. However, an unstable macroeconomic environment will depress the access to mortgage finance and the housing market. The Nigeria economy is currently enjoying rapid economic growth, currently GDP growth is around 8% (World Bank, 2014) and with short term volatilities. Despite its volatilities it is ranked 26th largest economy in the World.

Walley and Boleat (2008) argued that the two key macroeconomic variables that are relevant to the housing finance are the rate of inflation and interest rate. Loans to finance a property is for a relatively long period of time and a high interest rate and inflation rate will be detrimental to the development and access to mortgage finance as these will impact on the household affordability. In Nigeria, inflation rate is on the average of 24 percent and interest rate is on the average of 25 percent, which may not be a suitable macroeconomic environment for the mortgage market to be able to ensure access to the low-income households in the economy.

Flamini et al (2009) study emphasized the role of fuel price and GDP growth as thus have impact on the availability of funds for housing finance. Nigeria being a mono product economy, the buoyancy of the economy in terms of revenue generation depend on price of oil in the world market. The rate of its volatility will impact on the ability of Government to provide the infrastructures which will increase the accessibility of mortgage finance at a reduced cost to the household. The unstable nature of the revenue generation for Government has impede the developmental role of the government and as well the flow of funds into the financial market. This is particularly critical to the financial system of Nigeria which is totally dependent on public sector funds for its survival.

The existence of high unemployment implies that very few young households will be able to get on the property. Such will not enhance the development of the mortgage market. In Nigeria, unemployment rate is high, and such depress the development of the market.

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5.11.2   Policy and Regulatory challenges

The policy and regulatory challenges can be looked at from the legal system, land ownership, title registration, Governor's consent and registration charges, collateral enforcement.

Legal System

The legal system in Nigeria on mortgages and property is a replica of the English common law. The only difference is the land ownership (Walley and Boleat (2008), Finmark trust, 2010). This does pose challenges because different laws are applicable to land transactions in different parts of the country. Each of the 36 states of the federation have different land laws and each have separate land registries. The lack of unified law on land transaction is a challenge to access mortgage finance. From the perspective of the financial institutions, different risk assessment criteria have to be developed and different conditions set which could pose a serious credit risk to their business.

Land Ownership

The land use act 1978 decree gives the ownership of the land in the state to the Governor of that state. Based on the land, the governor can allocate the land to individuals, various bodies and associations at his discretion. If the Governor's political policies and ideology does not tend towards housing development, thus affect the availability of residential housing and since demand for housing and demand for mortgage finance are directly related, access to mortgage finance will be limited. In addition, there is high level of uncertainty in the land allocated by the Governor. This is because if such lands are not developed within 2 to 3 years such lands will be collected and reallocated, such practice reduce the access to mortgage finance, as no lender will be willing to lend on such property.

Title Registration

Title registration in Nigeria is carried out on state by state basis, most of their operations are not computerised and a search could take time before it could be done. This administrative bottleneck could depress the access to mortgage finance. This is because lenders will want to be sure that the title is not encumbered. However, access to mortgage finance will be enhanced if all the land registries are computerized and search can be done in a couple of

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minutes.

Registration Fees

Walley and Boleat (2008) paper evidenced that cost of registration in Nigeria is the highest in the world. Nubi (2005) study showed the cost of registration and obtaining a governor's consent is about 59% of the value of the property in Lagos and Abuja in Nigeria. Due to the significant cost required to register a property, such will restrict access to mortgage finance. This is because a property needs to be registered to ensure its ownership. And without a genuine certificate of occupancy, financial institutions may not be willing to provide access to the required mortgage finance.

However, a research conducted by the World Bank estimated the total fee to be between 20% and 30 %. The estimate was based on those that can obtain waiver and/or defer payment on the total cost of registration. Considering the number of days of registration of a property, World Bank (2014) emphasized that it takes 77 days to register a property in Nigeria. This restricts the access to the demand for mortgage finance.

Collateral Realization

Collateral realization is critical in credit market. A lender will be willing to increase access to mortgages if there is ease in realising their assets when credit loans have gone bad. The ease of realization of a collateral depend on the effectiveness of the legal system which should ensure this. A judiciary system that make the realization of collaterals difficult like the Nigeria case could limit the access to mortgage finance. This has the implication on the quantum of households being rationed as mortgage providers tends to reduce their credit risk exposures.

5.11.3 Financial sector challenges

The financial sector is the centrepiece of the mortgage market. A robust financial system will ease the access to mortgage finance. The following challenges have been identified to be constraints of access to mortgage finance. They are:

Absence of credit history: Mortgage lending in advanced economies use household credit history/rating to access their suitability for a mortgage. This enable lender to access household credit risk and decide if the household will be rationed or not. Such key

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determinant is not in existence in Nigeria financial system. The absence of credit history has constrained some household from accessing mortgages.

Ignorance of NHF: The national housing funds is a scheme introduced by the Government for households and their employers to contribute of 2.5% of their income towards home acquisition. Such scheme will be favourable to those that can afford a loan. However, most states of the federation opted out of the scheme as it was termed a regressive tax. Such significant scheme would have eased the access of most of low-income households to mortgage finance.

Funding issue: This is a major challenge that is militating against access to the mortgage finance. High interest rate is one of the predominant issues in the Nigeria mortgage market and the short tenure of loans. The structure of the mortgage finance in Nigeria are variable rate mortgages and coupled with the high interest rate, this could lead to affordability issue. This is because as the interest rate become higher, proportion of household income met for household consumption tends to reduce and more to the payment of the monthly repayments.

Unavailability of secondary market: The Nigeria secondary mortgage market is not interconnected with the capital market and institutional investors are always interested and willing to invest in market that have efficient links to the capital market to guarantee their investments. The lack of this interconnection put enormous pressure on the lenders to grant long-term funds needed in the mortgage market. This limited the access to the mortgage finance.

Unsecured domiciliation of salaries: The source of repayment on a mortgage is important to the lenders before any loan could be granted. Due to primitive stage of the financial architecture in the Nigeria financial system where products such as direct debits are not available, a lender will want to have the salaries of the potential home owner domiciled in their banks without which such in place, mortgage finance may not be granted.

High down payment: Down payment is the initial upfront payment for property and the other part of the total cost of the property is paid by a mortgage. If the down payment is very high, most households may not be able to afford it and without the initial upfront payment, access to mortgage finance will be limited. In Nigeria, upfront payments on properties could be as

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high as 50% of the property price. Such high down payment restricts access to mortgage finance.

Absence of Guarantee Scheme: A guarantee scheme is an additional security which a lender sorts out for in a mortgage lending process. Such will give the assurance that if the loans go bad, the risk will be transferred to the guarantor. In the Nigeria context, there is nothing like such guarantee scheme and consequently, households that cannot provide such, are automatically rationed and access to mortgage finance limited.

Poor Saving habit: Conventionally, households are expected to save part of their income for unforeseen circumstances. However, due to the low income in sub-Sahara Africa, their disposable incomes are spent on consumption with no savings. Such attitude will depress the ability of household to accumulate savings which could have form part of the contribution toward the deposit needed for mortgage of a property.

5.11.4   Institutional challenges:

Mortgage finance accessibility in Nigeria could also be associated to institutional problems which leads to a less sustaining approach to the development of the market. This can be attributed to the institutional arrangement failure to build synergies between the household demand, supply of housing and bridge the gap in financing which is critical to the survival of the market. Under this section the followings institution problems peculiar to the Nigeria context were discussed.

Shortage of subsided houses for purchase: In any economy that have a robust mortgage market, a subsided housing scheme is always in place. For instance, countries like, United Kingdom, United States, Canada, Germany etc. Such programme empowers the low-income households to climb the property ladder. Without this, the less privileged in the society may not be able to access the mortgage market as they cannot meet the affordability criteria. In the United Kingdom, the Government introduced the help to buy scheme which enable first time buyers to buy new properties with just 5% of the total value of the properties. However, in Nigeria, due to poverty level and very low-income structure, many households could not get on the property and access to mortgage finance to buy the few available subsided government property is not available.

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Underdevelopment of insurance practice in the mortgage market: The mortgage insurance in Nigeria is still at its early stages. A developed insurance market for a mortgage guides against unexpected losses that could occur during lifetime of the loan facility. Such will boast lenders and investors confidence and the assurance that their investment will be recouped even if the loan facility gone bad. The absence of this in Nigeria has limited the availability of funds into the market and foreign investment participation in Nigeria is reduced to the secured institutions like Central Bank of Nigeria. Access of the low-income households will be reduced if the robust mortgage insurance is not in place. However, despite the recapitalization of the insurance industry, the situation has not changed as most insurance companies in Nigeria are not interested in mortgage insurance.

Difficulty in enforcing foreclosure: When mortgage loan has gone bad, the lenders have the right by law to take the possession of the property. In Nigeria, like other places in the World, possession order can only be obtained from the court and such usually takes time. This is due to the inefficiency of the Justice system where court cases could take up to ten years. The inability of quickly getting a possession order and taking over a property does not encourage enough supply of finance in the mortgage market and thus, intensify credit rationing.

Political unrest/religious crisis: Instability in the political situation in the country will depress the mortgage market. This situation will make investment and lending not suitable. A country ravage with war/religion crisis will drive away the mortgage market supply chain. In Nigeria, the long military rule and colonial era have significantly contributed to the political unrest and in addition, agitation for regional resources control and devolution are the pressure points at the regional levels. Such does contribute to the low rate of growth and development of the mortgage market in Nigeria.

Increase in the bank's capital (Recapitalisation of bank): Prior to the Bank recapitalization exercise of 2005, it was argued that low capital base of banks and few branch networks were the bane of the supply of funds needed in the mortgage market. But after the Bank capitalization exercise, the number of banks reduced from 92 to 25 and each bank increased the branch networks. On the average each bank had over 300 branches. This did not increase bank involvement in the mortgage market. The banks attitude was to make quick profit and increased their participation in the stock market, oil and gas, manufacturing etc and turnover

the profit and recycle such activities. But not the mortgage market, maybe due to long tenure for mortgage finance. Evidence for the average mortgage loan before and after the bank recapitalization does not show any significant difference.

No Interconnectivity of land registers: By the constitution of the Nigeria, the land is under the control of the state and the Governors of the state must give its consent of approval for its use. However, each state operates its own register, however, the registers are not interconnected. The implication of this is that, it makes confirmation of the land status very difficult and add to the long time necessary to consummate a transaction. Where land status confirmation cannot be made, access to mortgage finance is denied and the households are credit rationed.

5.11.5   Housing sector challenges:

Housing sector in Nigeria have its own peculiar problems which prevent Nigerian households' access and consumption of their desired property. Such are synonymous to the Nigeria context and will be discussed in detail. Prominent among them are:

Low income of average Nigerians: Households access to the mortgage market is dependent on a reasonable level of income, without which such access can be restricted. For instance, if the households are within the minimum wage bracket or only a single source of income, such household may not be able to afford a mortgage and thus consumption of their desired property may be limited. In Nigeria, where more than 50 percent of the population live on less than two dollars a day and with the high interest rate and inflation, most of the household cannot afford to be on the property ladder. The impact of poverty is more prominent in Northern Nigeria compared to Southern Nigeria, such as affected the infrastructural developments and the average income level. In addition to this, the average income of Southern Nigeria is three times larger than Northern Nigeria and such depress the development of the mortgage market.

High cost of construction: The cost of construction in Nigeria is very expensive. This is because some of the building materials are not manufactured in Nigeria and coupled with the high exchange rate at which the local currency (Naira) is exchanged for and consequently, the cost is passed onto the household through high property price. This has been a critical factor if the

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property on the market is going to be within reach for the low-income households. The high cost of construction has prevented many individual investors participation in the housing sector because it does take a long time period to recoup their investments and thus made Nigeria not a good place to do business. This is confirmed in Nubi (2000).

High level of employment in informal sector and irregularities of income: Earnings is important to the mortgage market and so is the level of employment and regular income. The development of the mortgage market can be attributed to the growth in regular income and high level of employment. However, in Nigeria, 85% of the households working are in the informal sector and as such income may not be regular to prove their credit worthiness and the non-existence of credit scoring/credit rating has made the bad situation worse. This is confirmed in Nubi (2000).

Long period of processing of loans: Due to administrative bottlenecks, the processing of loan application takes on the average of 12 months before the loan could be approved and disbursement. In most cases, due to inflation rate, the property price could have increased which means, the household will have to look for other sources of funds to complete the payment to the vendor. This is a direct opposite of what is obtainable in advanced economies, where mortgage loan application and approval can be completed in two weeks. This is confirmed in Nubi (2000).

Distrust of Primary Mortgage Institutions: The primary mortgage institutions (PMI)in Nigeria request for documentations from households applying for mortgage finance. Sometimes, due to different approaches used by these PMI have created a feeling of discrimination among loan applicants. For instance, the documentations requirements are not similar for all the PMI and households believed that the strict documentation request are deliberate strategy to continue to ration them and thus reduce their access to the mortgage finance in Nigeria. This is confirmed in Nubi (2000).

Cultural beliefs and aversion of debt: Most households do not believe that you have to borrow now and pay back over the cause of their lifetime. Such cultural practice overtime has made an average Nigeria to be debt averse. This cultural belief about mortgage finance have hindered the development of the market. This is confirmed in Nubi (2000).

Refusal to contribute to the national housing fund: The National Housing fund (NHF) is a facility vehicle which warehouse contributions from workforce in Nigeria. This is a mandatory payment of 2.5% of total earnings and such funds are remitted to the Federal Mortgage Bank that manages the funds. These are used to provide subsidized mortgage, however, most states (30 states) have refused to remit the funds to the Federal Mortgage Bank which have greatly reduce its ability to perform its function effectively.

In conclusion, this section provided a critical investigation of the Nigerian mortgage market and structure of the market was examined to understand the operational, process and procedure of the market. The impact of macro economy on the mortgage market in Nigeria revealed that a buoyant economy should support the development of the market. However, high inflation rate and high unemployment in Nigeria have depressed the market. The legal and regulatory perspective does not support the development of the market. For instance, the land use act 1978 do not encourage the market. The regional perspective to the Nigeria mortgage market was examined because of the complexity of the Nigeria economy and because different regions have peculiar characteristics which influence households' ability to access the mortgage market.

A robust financial market is key to the mortgage market, the role and structure of financial institution in Nigeria was examined. It was established that there is a linkage between the formal financial market and the informal sector. This is because of the transmission mechanism in place which allowed those who borrowed from the formal financial sector to re-lend to the informal sector of the economy. Based on this, the ability of financial institutions particularly banks to provide the long-term needed finance in the mortgage market is very necessary.

Lastly, based on the review, this section has set the ground for the empirical modelling of the demand side and supply of funds for mortgage market. The models to be adopted will incorporate critical determinants/variables that are peculiar to the Nigeria mortgage market and the econometric models approach will be used to identify the constraints, impediments and limiting factor militating against the Nigeria mortgage market and set the ground for solutions to the identified problems and policy recommendation.

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Chapter 6: Research Methodology

The previous chapters have intensively discussed many of the underlying arguments with regards to the research of the mortgage market particularly in the context of the Nigeria economy. Based on the literature reviews findings and information that was gathered, critical research questions posed which is the pillar of this research will be answered. The discussion in this session centred around the philosophy, research approach, research design, research methodology, theoretical and econometric models and model specifications. A discussion of the data analysis will be done and based on the above, the research questions will be answered.

In the research design, the structure of the Nigeria mortgage market was considered. This is important because understanding the structure of the market will enable the research to critically and effectively analyse the constraints in the market which is the aim of this study.

The housing sector have undergone tremendous transformations due to rapid urbanization in Nigeria. The rate of population increases in the urban areas lead to the increase in demand for housing and thus demand for mortgages. Boleat and Walley's (2008) report classified the Nigeria housing finance market into 2: which are

- The informal sector- This constitutes the largest share of the Nigeria housing market. The informal sources are esusu (rotating saving scheme), the traditional co-operative system, individual and family savings.

- The formal sector- This is made of two components. The first is the upper-income groups located in the urban areas and the second is the lower income group that rely on subsidized National housing trust fund to access the housing.

Based on the above structure identified, this research will investigate the factors/drivers of the demand for mortgage finance and supply of mortgage finance. This section will focus on the formal sector of the market. Theoretical and empirical models will be analysed, and a suitable approach will be used to identify constraints in the Nigeria mortgage market. At this point, a quick preview of the research questions is critical for an effective research design. They are:

6.1   Research Procedure/Strategy

The following steps represent the key elements of procedure for conducting the research.

*   **Step 1 – Defines in clear terms the problems intended to be solved by the research. This will lead to formulation of the research questions and statement of tentative research objectives. Answers to the questions provide solution to the problem**.

From the review of relevant literature, the research will identify constraints to the growth of Nigerian mortgage market. However, based on those studies, suitable models were identified which will be used to evaluate the notable constraints to the long term access to funds in the Nigerian mortgage market. This investigation was intensively carried out for both the demand side of the Mortgage market and Supply side of the market.

*   Step 2 – **A critical review of existing National development plans and housing Policies in Nigeria. The review is aimed at highlighting the achievements, defects and reasons for such. The sources of finance prominent in Nigeria were identified and the effective mechanism discussed. The Nigerian financial market was critically investigated and its contribution effectively analysed.**

In order to understand the full complexity of the existing housing issues, the housing policies and programmes in Nigeria from inception to the recent Government plans was traced and investigated. The focus will be to critically investigate the causal factors of the failure of the policies, achievements, lessons learnt and further way forward. This should be part of this research contribution to existing literature. The structure of the Nigeria financial market was examined, and it revealed that the first-generation banks are actively involved in the mortgage market.

*   **Step 3 – is to adopt and explore models for the research.**

In order to answer the following research questions, theoretical and empirical models were reviewed. From the demand side of the study, various demand for mortgage finance were reviewed. However, models that have been tested and used in the developed economies were considered. This is because the models have been widely used in literature by world leading experts in the field of finance and the associated econometric issues have been identified and ways to resolve such have been adequately provided.

On the supply side, a mix of models that investigated banks performance in developed and emerging markets, country and cross-country studies were considered. A critical review and investigation revealed that similar determinants were observed across all the studies. A revised model that was previously used on sub-Sahara Africa countries will be adopted. The reason is that peculiar characteristics like the Nigerian context were examined.

The following research process was followed:

The first research question in this study is to investigate and identify the drivers of demand for mortgage finance?

Various studies on the demand for mortgage finance based on life cycle perspective will be examined and a model will be used to explore and identify the causative factors of the demand for mortgage finance in Nigeria.

- The impact of variables like current income, loan to value ratio, mortgage interest rate, down payment, house prices, age, sex, employment status, on loan amount will be examined.

The second research question which is to determine the regional prevalence, characteristics and determinants of the mortgage market?

Due to the multi-cultural structure of the Nigeria society, regional investigation at the regional level is critical to this study. This will enable this study to identify constraints prevalent at the regions, and consequently, solutions to the identified problems could be provided. Understanding regional prevalence problems of the mortgage market in Nigeria will be an important contribution to literature.

The third research question is "what is the impact of rationing on the demand for mortgage finance".

This research examined the theoretical underpinning of rationing in the mortgage market and investigate if credit is rationed in Nigeria. This research examined the different types of rationing in literature and empirically investigate the impact of rationing on the demand for mortgage finance in Nigeria.

The fourth research question which is "to critically investigate and assess the role of the

financial institution particularly banks in the supply of mortgage finance".

The ability of financial institutions particularly banks in the granting of long-term credit is central to the development and effectiveness of any mortgage market. Banks' ability to grant long-term credit suitable for mortgages does not only depends on factors within the bank control alone (bank specific factors) but other factors such as the macroeconomic situations, industry factors and the institutional issues. The research will investigate the impact of these factors on the ability of Nigeria financial system to grant the needed long-term funds for mortgage finance. Aggregated data from the Central Bank of Nigeria, World Bank were obtained and used to empirically investigate this.

The fifth research question will **critically investigate the practitioners' perspective of the perceived operational efficiency of Banks and the mortgage market**. Based on this, efficiency of the financial Institution in Nigeria will be examined, and questionnaires will be administered to the Senior Banker and Loan officers, Regulators from Central Bank, National Deposit Insurance Companies and Security and Exchange commission. This will enable the researcher to identify constraints limiting the development of the market from the practitioners.

Step 4 – is to analyse and interpret research results (i.e. data). Results of the research will be analysed with appropriate statistical methods and their interpretation will be done in the light of current state of knowledge of the subject matter, and researcher's knowledge of the variables measured and the circumstances under which the research will be conducted.

Step 5 – is to write up the findings and recommendations of the research.

6.2   Research Approach

In conducting an academic research, the researcher should consider several issues at the onset or initiation of the project. These are "what to research", "how to go about it", "data availability" and "suitable method of estimations" among other issues. The answers to the research questions depends on the reasons for engaging on the research in the first place, what the researcher wants to achieve with the inquiry and as a consequent, this will influence the choice of the research method. However, the research methodology choice in an academic research should not be based on practicalities alone but it should be grounded on philosophical, theoretical and empirical models and such should guide the research because

a proper consideration of the appropriate research paradigm will enable the researcher to undertake a robust and insightful Investigation.

Philosophical paradigms are set based on assumptions about how the world is perceived and how that perception can be used to understand how it works. Different philosophical paradigms exist to guide researchers, such as: Interpretivist, Positivist, Critical or Subtle Realist, Critical theory and Feminist paradigms. However, no research paradigm is superior to each other, but they have specific purpose in providing a distinct means of producing unique knowledge.

Creswell and Poth (2017), Creswell (2014) and Hesse-Biber Nagy (2017) emphasized that philosophical paradigm is a comprehensive belief and practice in any field of subject. From the philosophical perspective, a paradigm comprises of views of the nature of reality (Ontology) which could be external or Internal to the researcher. Ontology system of belief reflects on how individual interpret facts and the central question associated with it is based on whether social entities need to be perceived as objective or subjective. The objectivism or positivism and subjectivism are the two main important aspect of ontology. Objectivism represents the ontological position that social phenomena are independent and external to the social actors. Subjectivism/Constructionism or Interpretivism perceived social phenomena has internal and it exist through perceptions created by the social actors.

Epistemology view the type of knowledge that can be generated and standards for justifying it and a disciplined approach to generating that knowledge is methodology.

It has been generally accepted that the researcher's paradigm shapes the way they perceived their subject matter and the world (Creswell and Poth (2017), Creswell (2014) and Hesse-Biber Nagy (2017). A paradigm is a set of distinct set of concepts or thought patterns, which includes theories, research methods, postulates and standards for what constitutes legitimate contributions to a specific field.

Etymology perspective of paradigm viewed it as a pattern, example, sample, exhibit, expose to show and to point out facts (Liddell, 1996). However, rhetorical perspective of paradigm, identifies it as a purpose which provide the users of the information with an illustration of similar occurrences. This illustration does not mean that the users are taken to a conclusion, but it may be used as a guide to assist them.

A scientific paradigm is referred to as a set of concepts and practices that defines a scientific discipline. Kuhn (1996) argued that it is a universally recognized scientific achievements that develops models that are used to provide solution to a given sets of problems for the society.

In order to answer the research questions, an empirical investigation of the associated constraints of the Nigeria Mortgage market was undertaken. Research in social and behavioural sciences can be further divided into exploratory and confirmatory methods (Onwuegbuzie and Tedlie 2003). Exploratory research is a research method that are used when a problem has not been clearly defined, or its real scope is not yet clear. It provides an avenue or means that familiarizes the researcher with the problem or concept to be studied. Exploratory research helps determine the best research design, data collection and selection method. Aghaunor et al (2006) emphasized that explorative investigation methods should be appropriate when a research problem is unstructured and difficult to delimit.

Exploratory research, according to Jacobs (2001 p. 129) emphasized that this must use materials, instruments, methods, models of history. This is because if we want to understand the dynamic changes in contemporary social structure, we should critically understand and incorporate the techniques from the historical perspective as we are a product of history.

Shields and Rangarajan (2013) further discussed that exploratory research should ensure priorities are established which should improve on the final research design. In addition, it helps to determine the best research design, data collection and selection of subjects. Exploratory research relies on the techniques such as critical reviewing of available literature and data analysis (secondary research), discussions with stakeholders such as customers, employees and management (Informal qualitative approaches) and through in-depth interviews, focus group, case or pilot studies (formal qualitative research).

Akinwunmi (2009) stances further emphasized that researchers do not adequately take cognisance of the past developments and historical perspectives. Based on this, housing researchers' reluctance to delve into past housing histories can be attributed to the very few grounded researches on the Nigeria mortgage market with unavailability of micro dataset for in-depth investigation.

It is on this foundation that the historical perspective which include the methodology, adopt and explore the theoretical and empirical models used in the past, are reviewed and revised

models to suit the current Nigeria circumstances and based on this, identify constraints and limiting factors affecting the Nigeria Mortgage Market.

Confirmatory research is research conducted for a problem where there is a clear understanding of the associated problem. This is based on the grounds that there is an established theory and the objective of the research aligns with the theory with the aim to find out if the theory is supported by the facts. The research hypotheses are stated, and these are tested to confirm or refute the theoretical basis.

In summary, the objective of exploratory research is theory initiation and theory building while confirmatory research focuses on theory testing. However, a research can be classified on a continuum between exploratory and confirmatory research. The research purpose and question of this thesis can be described as both exploratory and confirmatory but largely exploratory, since investigation into the factors, constraints and impediments to the development of the Nigeria mortgage market evolves based on theoretical and empirical models, thus those models are explored in the Nigeria context to identify those constraints. The confirmatory aspect of the study tends to confirm if the findings align with the theoretical perspective and predictions.

Apart from the exploratory/confirmatory classification, research can be classified as quantitative, qualitative or mixed method. These are discussed below:

6.3 Quantitative Research Approach

The quantitative research paradigm, also known as the "traditional", "positivist" or "empiricist" research paradigm. This is a research process in which an enquiry into a social or human problem are based on testing a theory which involves the use of variables, measured with numbers and used analytical tools and statistical procedures to determine whether the predictive generalizations of the theory are true or not (Creswell 2014).

This research method provides numeric description of trends, attitudes or opinions of a population by studying a sample of that population. This distinct characteristic of this research method according to Creswell (2014) are as follows:

* It views truthfulness or reality to exist in the world because of the objectivity and being quantitatively measured;

* This research paradigm ensure that researchers remain distant and independent of what is being researched and consequently it ensures an objective assessment of the situation;

* quantitative research is not value laden as the researchers' values are kept out of the study.

Other distinguishing characteristics are that the entire process of the quantitative methodology uses the deductive form of reasoning or logic wherein theories and hypothesis are tested in cause-and-effect order.

In term of the Concepts ideas of the study, variables to be used and hypothesis relevant to the theoretical perspective are identified before the research begins and such may not change throughout the study, the intent of the study is to develop generalisations that contribute to the theory and that enable one to better predict, explain the subject matter.

To investigate the research questions 1 to 4, a positivist research paradigm was adopted. This scientific research paradigm strives to investigate, confirm, refute or predict hypothesized phenomena. In aligning this with the philosophical paradigm adopted, a quantitative assessment of the factors that affect the demand for mortgage finance and housing, regional prevalent determinants of demand for mortgage finance, understanding the impact of rationing on the Nigeria mortgage markets and assessment of the role of financial institutions in granting the long-term funds needed in the mortgage market, models were estimated using various econometric techniques such as ordinary least squares, probit and logit models. These assessments will provide a means of identifying the associated constraints which will be used to proffer solution to the identified problems.

The Positivist research paradigm holds numerous beliefs that the nature of knowledge can be developed as models and the understanding of such models is important for understanding the nature of knowledge (positivist epistemology).

A positivism perspective holds the belief that there is knowable reality that exist independently of the research process (Hesse-Biber Nagy (2017, p 11). It is their belief that world is governed by rules that produce a pattern which can be used to produce the needed results. Consequently, a causal relationship between the identified variables from theories are proven and explained. And a patterned social reality can be predicated and controlled. Based on these, information derived from the datasets are interpreted through reason and logic

which forms the exclusive source of all certain knowledge. The Positivism perspective belief that dataset should be verified (positive facts) independently of the researcher which forms the empirical evidence.

Empirical evidence is an information that is verified to either deemed to be the truth (corresponds to reality) or a false/inaccurate claim of the subject matter. Thus, positivism is argued to be based on empiricism.

Empiricism emphasizes evidence through the process of design and based on this carry out experiments. These experiments are used to investigate the research hypothesis and test the validity of theories resting on a priori reasoning, intuition and revelation.

Dataset Sources

Demand side of the study. Household level dataset from World Bank survey was obtained. The World Bank have conducted 5 waves of surveys on Nigeria households from 2005 to 2017 which covers households' peculiar characteristics like consumption pattern including mortgage finance consumption, infrastructural development, demographic pattern, financial position and work patterns. This is very important to this research because it covers period's boom, financial crisis, recovery and stability. Another important contribution of using the Data set from World Bank is that it is standardized which make comparing the data and results with other countries in the same data pool sample. Total number of the households in the surveys are over 120,000 and individuals are over 526,000. This provide an avenue for a robust analysis of the subject matter which has not been done before in the Nigeria literature.

Supply side of the study. Financial Dataset on the Nigeria financial institutions were obtained from the Central Bank of Nigeria (CBN), Others like Macro data, Institutional data were obtained from World Bank and Bank scope etc, Central Bank of Nigeria financial institution data were obtained covering periods of thirty-six years (1981- 2017). These are significant periods to investigate constraints in the market because it witnessed symbolic reforms such bank recapitalization, transformation of the political architecture, profit explosion, credit crunch, recovery and stabilization. Based on financial models that were discussed, a revised model was used to understand the determinant and factors that can influence Nigeria financial Institutions in granting the needed long-term funds needed in the mortgage market.

Data Analysis Approach

This research will explore theoretical and empirical models using various econometric techniques to answer the research above. A robust econometric analysis will be conducted while incorporating the life cycle hypothesis and identifying constraints limiting the development of the mortgage market in Nigeria. Some of the techniques that will be used are probit modelling techniques, Logit modelling techniques and simultaneous equations.

6.5 Qualitative Research Approach

The qualitative research paradigm, also referred to as "constructivist", "naturalistic", "interpretative", "post-positivist" or "post-modern perspective" approach (Creswell (2017), Akinwunmi (2009), Creswell and (1994), Lincoln & Guba (1985) and Smith (1983).

Creswell (2017) emphasized that qualitative research approach is an enquiry process of comprehending a social or human problem/phenomenon based on building a complex holistic picture formed with words, reporting detailed views of informants and conducted in a natural setting.

One of the unique distinctive characteristics of the qualitative research paradigm is that the manipulation of variables or imposition of the researcher's operational definitions of variables on the participants are not introduced, but this enables the meaning to emerge from the participants feeling about the event (Creswell, 2017, 2013, 2003 and 1994).

Creswell (2017), Bogdan and Biklen (2007), Mertens (2003), Locke et al (2000), Marshall and Rossman (1999) studies emphasized the following distinctive characteristics of qualitative research:

* The researcher visits the site of the target participants to conduct the research which gives the researcher that opportunity to extract details about the individual and also be involved in the actual experiences of the participants;

* The research methodology under qualitative paradigm is value-laden as the research is not separable from self which reflect in the data collection strategy, description and analysis of text or pictures/images, representation of information in figures and tables and personal analysis and interpretation of findings of all informed qualitative procedures.

The reasoning adopted in qualitative research paradigm is mainly inductive where the various

aspects or categories emerge from subject matter under investigation rather than those identified before commencing the research. Based on this, the observed pattern and trends can provide information leading to theories that help explain the phenomenon under investigation.

Akinwunmi (2009) emphasized that theory and hypothesis suitable for the research may not be established at the inception of the research and consequently the research questions may change or redefined as the researcher learns more about the subject matter and knows what questions to ask and whom to ask. The method is therefore emergent rather than tightly prefigured.

In order to take a holistic view of the performance of Financial Institutions in the granting the needed long-term funds in the mortgage market, it is beneficial to get the views of the Bankers and loans managers, this aspect of this research adopted an interpretivist approach.

The approach helps answer the research Question five which is to understand constraints and issues identified from the perspectives of the participations through detailed descriptions of their cognitive and symbolic actions which can be used to understand the mortgage market. The aim of this section is to investigate how the Bankers and loan managers perceive the mortgage finance market in Nigeria in terms of housing market, its finance and sources and explore how inefficiencies in the sector impact on its ability to grant the needed long-term fund in the mortgage market, and how the constraints can be mitigated. A qualitative research method is suitable to collect and analyse the data from the loan managers and Bankers.

Data Sources

Data will be collected using semi-structured questionnaires. This should allow the Bankers and loan managers to convey to the researcher their perspectives of the mortgage market in regard to its finances, sources of funds, regulations, government activities. The questionnaire will focus on the following aspects : Regulatory factors (constraints relating to issue from laws and regulations); Organisational factors (constraints associated with the operational activities and organisations problems); cultural-related factors (constraints associated with the culture and belief of people regarding borrowing particularly the mortgage market).

The questionnaire will contain two types of questions which are closed-ended and open-

ended questions. The closed-ended questions will enable the respondents to select a predefined answer on a Likert scale which thus has a quantitative approach and the open-ended questions give the respondents the opportunity to express their opinions on the subject-matter without leading them. This will enable them to give the opportunity to express in-depth ideas which is based on their background and experiences which the research can draw on. This aspect will be analysed as qualitative data.

For data collection, 50 Senior bankers and loan managers were selected, representing two people from each of the commercial banks in Nigeria (21 commercial Banks in total), Five for the Central Bank of Nigeria and three from the Federal Mortgage Bank of Nigeria. The database of the Chartered Institute of Banker of Nigeria which warehouse all bankers' records in Nigeria and Aboard will used through the administrator to send out the questionnaire online.

Data Analysis Approach

The data obtained from the respondents to the questionnaires (Closed-ended questions) will be fed into BOS software and it will be analysed. Also, the data obtained from the respondents (Open-ended questions) will be transcribed and edited to eliminate typographical errors. These will be fed to the software, coded and analysed. The coding will be done to identify the constraints from the respondents in accordance with the literature.

6.6 Mixed Methods Approach

The mixed methods approach in research is denoted as integrating, synthesis, multimethod and multi methodology which utilizes both the quantitative and qualitative research methods in a single research where it could be concurrently or sequentially (Creswell, 2017, Hesse-Biber and Nagy, 2017). It involves the collection and analysis of both forms of data in a single study. The methodology is normally appropriate due to the nature of the research being investigated where it is possible to collect both quantitative and qualitative data, the analysis of which would offer a better and deeper understanding of a phenomenon (Creswell (2014), Creswell (2013), Onwuegbuzie & Leech (2006), Johnson & Onwuegbuzie (2004), Mertens (2003).

The strategy in this research is to use the quantitative approach to be followed by a qualitative research approach to understand the perspective of loan managers in respect of the

constraints, impediments and limiting factors affecting the Nigeria mortgage market. In addition, the semi-structured questionnaire might gather information from the stakeholders about the mortgage market constraints as well as what strategies that can be suggested to improve the working of this critical market in the Nigeria context.

Creswell (2017) and Hesse-Biber and Nagy (2017) emphasized that an explanatory sequential mixed methods study which involves a quantitative component (Survey) followed by a qualitative component (Semi-structured questionnaire) might give the researcher a deeper understanding of the subject matter and collect suggestions on how these results could be used to combat the problems associated with the Nigeria mortgage market.

The use of this combined method often assists the researcher to tackle highly complex problems that involves several layers of understanding that require different analytical techniques. For instance, qualitative approaches and qualitative data collection methods require an analytical design that often deals with the analysis of textual data for meaning and are not particularly strong in obtaining an overall more macro picture. On the other hand, quantitative approaches and methods like Surveys, enables the research to test hypotheses and draw out generalization from the data.

Hoek-Smit (2005) argued that due to the constraints in the mortgage market, the best approach is to tackle the identified constraints from the policy perspective. The researcher agrees with this position. For a policy research, both the objectivity which a positivist research approach provides and the subjectivity which an interpretivist research approach provides is a necessity. Based on this submission, for the research to investigate empirically the associated constraints of the Nigeria mortgage market should incorporate both quantitative and qualitative research paradigms.

The mixed method research method in the research will be implemented through surveys and using of semi-structured questionnaire with both closed-ended and open-ended questions.

The surveys are made up of five household level survey micro dataset published from 2005 to 2017 on the Nigerian household peculiar characteristics and such behavioural attributes and pattern obtained can be used to understand the factors, determinants and limiting factors that can influence the Nigerian household with regards to their demand for housing consumption and demand for mortgage finance. These surveys are composed of microdata,

which provides specific information about individual persons and households. The information is broadly on a range of population characteristics which includes fertility, life-course transitions, migration, labour force participation, occupational structure, education level, ethnicity and household composition. The surveys show each record of a person with all characteristics numerically coded which makes it possible to study and understand the characteristics of people in the context of their families and other co-residents, thus, making it extremely important to this study to identify the determinants of demand for mortgage finance in the context of an emerging economy like Nigeria.

The questionnaire will be targeted at Senior Banker and Loan Managers to get their opinion on the issues in the Nigeria mortgage market and how they feel such could be tackled and furthermore, mitigates that can build into the system to avert such issues going forward. This should enable them freely to express their opinion in their own words without any restriction or control. This will enable the respondents to balance their view which should validate and ensure credibility of their response in the research. The finance providers that are targeted for the survey are commercial banks, Federal Mortgage Bank of Nigeria (FMBN), Mortgage Banks and other non-bank mortgage finance providers such as the cooperatives. Also included is the regulator such as Central Bank of Nigeria.

6.7   Reasons for Adopting a Mixed Method Approach

Based on the submission of Hesse-Biber and Nagy (2017), there are five reasons that might make a researcher to adopt a mixed method approach. They are:

Triangulation: This is a research strategy which involves using more than one method to study the same research questions or different research questions to give another perspective to the study. Based on this, it will enable the researcher to converge the research finding to enhance its credibility.

Triangulation can exist in different form. A method triangulation in research paradigm means using different method in the research process; theoretical triangulation means using different theoretical perspectives to answer the research questions and where different data sources are explored using same or different method is known as data triangulation. This research adopts data and methodological triangulation to help achieve reliability and validity of the results.

Secondly, this research adopted a mixed method design for **Complementarity**. This enable the researcher to gain fuller understanding of the research problem which is to identify the associated problems of the Nigeria mortgage market and to clarify the research results. For instance, a qualitative study of the determinants of mortgage market should be to ascertain the experiences and in-depth feelings of loan managers whereas the quantitative component involves using a survey research study to assess factors, constraints and limiting factors affecting households and their ability to demand for mortgage finance.

Thirdly, it encourages the development of better research outcome. For instance, results from one method can help to develop or inform the other method which could lead to better outcome. Combining the two-research paradigm (quantitative and qualitative research paradigm) will produce a robust analysis and outcome to the study of the Nigeria mortgage market.

The adoption of a mixed method would provide an avenue to initiate a process that will ratify the issues raised with the research findings where questions or a situation arises that resulted into contradictions. A new study is then initiated to provide the needed clarification and understanding of the phenomenon of the subject matter. In the case of adopting theoretical models for the emerging economy like Nigeria, it may not capture the cultural and religious perspectives which are critical factors in the Nigerian context which the qualitative aspect will provide a divergent view and interpretation on.

An elaborate Investigation like this research can also performed by a mixed method. This led us to the fifth reason, of adopting a mixed method which is expansion. An expansion is initiated to extend the breadth and range of the study. In the case of identifying the factors militating against the development of the Nigeria Mortgage market, the researcher expanded the study to include regional difference in the demand for mortgage finance and comparisons of the regional differences to ensure that the problems at the grass root can be tackled. In addition, the researcher has expanded the study by adopting self-structured questionnaires to obtain the views of Bankers and loan managers who are active practitioner in the Mortgage market.

6.8   Summary of Research Design

	Quantitative Approach	**Qualitative Approach**
Research Philosophy	Positivism Relies on different research models, variables, hypothesis, reductionist, logical, empirical, cause and effect oriented and deterministic perspective based on a priori theories to identify the determinants and factors affecting the development of the Nigeria mortgage market.	Interpretative Relies on the awareness of the researcher concepts, ideas and language which shapes the research to understand the perception of the subject matter under Investigation. This section will investigate the perception of senior bankers and loan managers on the inefficiencies of the Banks and mortgage market in respect of the cultural, organizational, operational and mortgage market related issues.
Ontology (Nature of the social world)	This research assumes that the determinants, constraints and limiting factors impeding the development of the Nigeria Mortgage market is yet to be investigated scientifically, which this research will do thoroughly.	This aspect assumes that the reality of the constraints in the mortgage market are stated but these multiple truths needs the perception of practitioners to construct an order of importance of the identified constraints which the models may not be able to achieve.
Epistemology (What can be known? Who can be a Knower?)	This research perspective is the constraints in the Mortgage market is knowable, and the truth about the determinants and limiting factors of the Nigeria mortgage market is yet to be found out. This research aspect is objective and does not allows values and attitudes to enter into the research inquiry.	This aspect agreed that the constraints in the mortgage market is knowable, however, a subjective stance was followed. This is because it will enable a critical understanding of the perception of practitioners in the mortgage market and how such intersubjective can bring out a better outcome.
Methodology Theoretical perspective: research questions	The Positivist perspective here used various theoretical and empirical models to establish a causal relationship among the identified variables. The methodology adopted stressed causality and based on this; a deductive mode of inquiry was explored. This enabled the research to confirm or refute through testable hypothesis, factors that impedes the development of the Nigeria mortgage market.	This section used the interpretative perspective to understand the perception of the practitioners about developments in the mortgage market.
Methods Used Analysis and	This section emphasized the importance of quantitative measurement techniques and how its measured. How the models are chosen and the justification for the	This section of the research emphasized the subjective perspective. The research method seeks to understand

| Interpretation of data | models used. The various variables available for a peculiar research in an emerging economy like Nigeria and emphasized the variables to be used to test the research hypothesis.

The research looks for causal relationship among the variable which will be used to predict human behaviour in respect of demand for mortgage finance.

Econometric and statistical analysis were used with the goal of generalization of the research findings. | the reality from multiple perspectives.

A questionnaire was used as a tool to gather the information critical to the research question here and to have a holistic perspective of the research problem.

Interpretative techniques adopted gives the research a priviledge live experience and retain the worlds of the practitioners on the inefficiencies of banks and mortgage market and how such problems could be mitigated. |

6.9   Modelling of Research Question 1 (Demand for Mortgage Finance)

This section examined the modelling approach and formulation that will be used in this study. Before identifying a suitable model for this research question, various theoretical and empirical models were reviewed, analysed and investigated. A quick examination revealed the followings:

There are few papers that empirically investigated the demand for mortgage finance holistically from the life cycle hypothesis perspective. However, many papers have examined demand for mortgage finance in relation to rationing, contract types, pricing and credit rating etc. A quick review of these literatures are below.

Follain (1990) examined mortgage borrowing from the perspective of the consumer and bank decisions. He argued that the household borrowing process is a choice of how much to borrow (the LTV decision), when to refinance or default (the termination decision), and the choice of mortgage instrument itself (the contract decision).

Rachlis and Yezer (1993) study of the demand for mortgage finance examined the system and suggested a system of four simultaneous equations for mortgage lending analysis: (1) borrower's application, (2) borrower's selection of mortgage terms, (3) lender's endorsement, and (4) borrower's default.

Phillips and Yezer (1996) study of the mortgage finance market compared the estimation results of the single equation approach with those of the bivariate probit model. The study evidenced that discrimination estimation is biased, and the biases are from the lender's rejection decision from the borrower's self-selection of loan programs, or due to the lender's underwriting decision which lead to the borrower's refusal decision.

Follarin and Dunsky (1997) studies examined the impact of uncertainty in the demand for mortgage finance. They measured the demand for mortgage finance in terms of the size of the mortgage and the findings from the study emphasized that the relative cost of a mortgage, household income and other personal characteristics have a great influence on the demand for mortgage debt. Much emphasis was placed on expected rate of return on debt and equity which required simulation of data to estimate.

Ross (2000) studied examined if there is a relationship between the mortgage loan approval and loan default. It found out the approval equation parameters have the opposite sign compared with the same from the default equation after correction for the sample selection. These theoretical and empirical papers did not focus on the factors that influence the demand for mortgage finance.

Other Studies examined the role of rationing on the demand for mortgage finance. Ambrose and Yoshida (2016) examined the role of Credit Rationing, Income Exaggeration, and Adverse Selection in the Mortgage Market. The study investigated how households perceived future credit availability in mitigating the impacts of adverse selection and income falsification in the mortgage market due to aftermath of the foreclosure crisis of 2007 to 2010. They found out that households who live in relatively low-income neighbourhoods are more likely to inflate or exaggerate their income and based on this, an adverse selection problem could arise. The study concluded that regulation changes have significant effect on self-employed borrowers which thus intensify credit rationing.

Hossain (2005) investigated impact of credit rationing in the mortgage market by exploring a credit-rationing model similar to Stiglitz and Weiss (1981) model which was combined with Lang and Nakamura (1993) information externality model to examine the properties of mortgage markets characterized by both adverse selection and information externalities. In a credit-rationing model, additional information increases lenders ability to distinguish risks,

which leads to increased supply of credit. According to Lang and Nakamura, larger supply of credit leads to additional market activities and therefore, greater information. The combination of these two propositions leads to a general equilibrium model. This paper describes properties of this general equilibrium model. The paper provides another sufficient condition in which credit rationing falls with information. In that, external information improves the accuracy of equity-risk assessments of properties, which reduces credit rationing. Contrary to this intuition, this increased accuracy raises the mortgage interest rate. This allows clarifying the trade-offs associated with reduced credit rationing and the quality of applicant pool.

Various Credit Rationing studies before 2005, focussed on the structural changes in the mortgage market associated with credit rationing. For instance, Duca and Rosenthal (1991), Linnemann, et al (1997) and Ambrose et al (2002), Meen (1990), Leece (2004), these studies critically examined credit rationing in the mortgage market before financial deregulation. These are periods where the building societies were in the pivotal position where the interest rate, loan terms and documents, loan amount are determined by them. However, after the deregulation, other financial institutions particularly Banks were allowed active roles to participate in the lending activities in the mortgage market and these studies evidenced it that more households were granted access to the finance needed to purchase their properties and thus, rationing ceased.

Previous models used in the mortgage market focussed on tackling sample selection bias in lending analysis and are not appropriate to estimate the demand for mortgage finance. The probit model of Ross (2000) and bivariate probit model used by Yezer, Phillips, and Trost (1994) and Phillips and Yezer (1996) are suitable for estimating a binary outcome. However, the paper did not consider the life cycle implication on the household choice.

 The following papers studied the dependence of the decision on loan amount as well as different endogenous variables on the exogenous ones.

Zhang (2010) investigated the sample selection bias and interaction between pricing and underwriting decisions using standard Heckman model. It used dataset from a national Bank that contain decisions variables. A three simulation studies were conducted to critically evaluate the sample selection bias and omitted variable bias. It was concluded that the single

equation generated biased estimates of pricing disparities when the impact of underwriting decision was not considered.

Bocian, Ernest, and Li (2008) study examined the mortgage market and pricing dynamics. It used 3SLS for the simultaneous decisions on pricing and credit rating and found the empirical evidence that non-white borrowers are more likely to receive higher-priced subprime credits than similar white borrowers. Ambrose et al. (2004) constructed a simultaneous equation system of LTV and house value, which is used as a proxy for loan amount to account for endogeneity.

Other studies have examined mortgage choice of households and focused on the optimal mortgage contract given uncertainty about future house prices, household income, risk preferences, and, in some papers, mobility risk.

Campbell and Cocco (2003) examine household choice between FRM and ARM in an environment with uncertain inflation, borrowing constraints, and income and mobility risk. The paper evidenced that an ARM is generally attractive, but less so for a risk-averse household with a large mortgage, risky income, high default cost, or low probability of moving.

Leece (2006) examined the mortgage demand from the perspective of the financial behaviour of the households. The paper empirically tested the Brueckner's model on demand for mortgage finance on UK mortgage market data. Leece (2006) used the mortgage instrument choice to differentiate between impatient debt maximizers and patient borrowers who borrow at intermediate levels. This paper identified circumstance where the household will use the largest possible mortgage and circumstances where the household savings are invested into the property. This paper significant contribution was to provide a test of theoretical model which estimated the mortgage demand equations which was adjusted for endogenous housing demand using a single housing finance system where household who borrow from the financial market face different opportunity cost of equity in their owner-occupied property.

Coulibaly and Li (2009) paper used household survey data in the mortgage market to identify the risk appetite of household. They found out that households who are more risk averse, with risky income and low probability of future move borrowers prefers fixed rate mortgage contracts compare to variable rate mortgage contract.

Forthowski, LaCour-Little, Rosenblatt and Yao (2011) studied the demand for mortgage loans and examined the household choice of either an adjusted rate mortgage or fixed rate mortgage. They argued that this could be a function of expected mobility. It was evidenced that the households that self-select the adjusted rate mortgage estimates their probability of moving in the future to be relatively high compared to those that will not move.

Firestone et al. (2007) paper examined and analysed the prepayment behaviour of low- and moderate-income borrowers. The study evidenced that the non-white borrowers prepay more slowly than white ones.

Nichols et al. (2005) study investigated the relationship between the rejection rates and interest rate in the mortgage market and personal loan market. They found out that there is a direct relationship between rejection rates and interest rates in the mortgage market and it is inverse in the personal loan market. The theoretical perspective established in the study was that the discrete levels of mortgage credit supply and the direct relationship between interest rate and rejection rates arises from a separating equilibrium in the mortgage market. This separation does rely on simple observation that processing an application through mortgage market of those borrowers who may apply for prime mortgage and for those ones who are subprime.

Ghent (2011) paper gave a robust discussion on the dynamics of demand for mortgage loans and steady state equilibrium for borrowers with hyperbolic compared to exponential discounting and examined the preference of such borrowers on the set of traditional fully amortizing mortgages and no-down-payment mortgages. Ghent concluded that young households and retirees are more likely to choose NDP mortgage that arises when those households behave hyperbolically.

Piskorski and Tchistyi (2010, 2011) evaluates the theoretical model of choosing the optimal mortgage contract that maximizes both lender's and borrower's combined surplus. Based on their evaluation, the paper provided a tool for prediction of higher default rates for adjusted rate mortgages when the interest rate increases but shows that, nevertheless, ARM is optimal mechanism for mortgage contraction.

Ozhegov (2014) paper introduced structural and econometric models for estimating the demand on mortgage loans. The model developed viewed demand for mortgage loan as a

function of probability of borrowing and the loan amount depending on borrower specific characteristics, contract terms and set of macroeconomics variables. Based on these, the household decision to borrow was described as the sequence of decisions on: 1) choosing the credit program; 2) approving of a borrower; 3) choosing contract terms from feasible set; 4) and loan performance. The model was specified to deals with endogeneity and self-selection of borrowers when estimating the demand-for-loan equations and the structure of dataset required but empirical analysis was not carried out. The researcher strongly believed that the mixture of household level data and macroeconomics data may not be suitable for this research.

Fuster and Zafar (2015) study examined the sensitivity of demand for housing to mortgage rates and leverage on understanding the impact of monetary and macro prudential policies on the housing market. Due to the difficulty of the empirically estimating of the sensitivities, a strategic survey was used to obtain information which was used to test their willingness to pay for the household properties under different financing scenarios. The findings of the paper were that neither the relaxation of down payment constraints nor the increase in non-housing wealth has a significant effect on the willingness to pay particularly the relatively poorer and more credit-constrained households.

Having critically reviewed and investigated these various models, the researcher is strongly of the opinion that these models and studies are not suitable to understand the demand for mortgage finance. This study explored the model of Ling and McGill (1997) and the reasons are below.

6.9.1 Justification for the adoption of a model
This study used household-level observations to determine factors/ causal agents/ constraints affecting the demand for mortgage finance. Surveys conducted by World Bank will be used and the surveys were conducted from 2005 to 2017.

The survey contained micro-level data of Nigeria households which include the followings: income, age, marital status, geographical location, nature of work etc.

The following circumstances were considered before the model was chosen.

Firstly, the choice of a model should align with the aim of the research, Ling and McGill (1998) paper focus on the aim of the research which is to identify the constraints/factors affecting

the demand for mortgage finance. This is quite different from Jones (1995) paper which focussed on excess mortgage demand. That is the difference between actual mortgage demand and the minimum amount needed to purchase the property. Also, particularly different from Follain and Dunsky (1997) model which incorporated the uncertainty conditions to the estimation of demand for mortgage finance. Leece (2000) study emphasized the role/impact of choice of mortgage type in determining demand for housing and mortgage. Based on what other studies tends to achieve, factors affecting demand for mortgage finance is not one of them. Ling and McGill (1998) is the most suitable model to be adopted and exploded.

Secondly, available data necessitated the adoption of the Ling and McGill model. Based on the limitation of data, empirical model of Follarin and Dunsky (1997) could not be adopted. This is because their studies assume that household make their portfolio allocation decision on stochastic properties on the assets returns. This require extensive data on household shares, bonds and others to determine the household consumption pattern. The lack of such comprehensive data from an emerging economy like Nigeria limited this research to adopting Ling and McGill model.

In addition to the comprehensive data requirement, Follarin and Dunsky (1997) assumed that there is a perfect capital market with no transaction cost, independence of portfolio decision making and risk preference for the continuous trading of assets. The assumptions which is practically not possible in any economy and as such limited the adoption of their demand for mortgage finance model.

Ling and McGill (1998) study resolved a specification issue identified, thus treating house value as endogenous variable. Follarin and Dunsky (1997) model excludes house value as an explanatory variable to avoid simultaneity bias in the specification of mortgage demand despite its importance. Such exclusion did not enable Follarin and Dunsky (1997) to capture the importance of house size in mortgage decision. Jones (1995) model also did not include house value in his specification as well. This specification issue was corrected in Ling and McGill (1998) model, thus making Ling and McGill (1998) a more suitable model.

Ling and McGill (1998) study provided a robust and rigorous analysis across age groups which other studies did not provided. The disaggregation by age is necessary for the analysis of the

demand for mortgage finance in Nigeria. This is because standard demographic variables alone cannot be able to control the life cycle effects.

Ling and McGill (1998) model incorporate both demographic and financial indicators which makes the models suitable particularly in an emerging economy like Nigeria. This is due to prevalence of high population growth rate and its associated problems and high poverty level. There are no other studies that have critically examined the demand for mortgage finance in this context.

The model consists two inter-related equations such as mortgage debt equation and house value equation. This implies that with the models, the research can determine the factors, constraints of the demand for mortgage finance and demand for housing simultaneously which no other studies have examined.

In addition to the above, Koblyakova, Hutchison and Tiwari (2014) applied to Ling and McGill (1998) model structure to their study of regional difference in mortgage demand and mortgage instrument choice in the UK. The paper examined the regional differences in mortgage size and mortgage contractors. This evidenced that the model is still relevant in current literature.

6.10 Research Model

In the research model specification, the household mortgage debt levels (mortgage finance) is determined by two interrelated household decisions which impact on the amount of owner-occupied housing to consume and the proportion of the house value that will be finance by debt rather than equity. (See pages 36-46 for detailed discussion on Ling and McGill (1998).

The econometric specifications provide the basis for empirical testing of the model of the demand for mortgage finance and housing value decision.

6.11 Data Source

This study uses household-level observations from 2005 to 2017 conducted by the World Bank. The Household level dataset contain details level of micro data on household including geographic location, number, age, marital status, level of education attainment, number of household worked, activity/employment status, industry general, sector of employment of the occupants, based on these, household income, house value and mortgage amount (LTV) were constructed. Detailed mortgage information is available such as size of property

(Number of rooms), household classification, ownership status of dwelling, types of property ownership.

The availability of data on infrastructural Facilities such as electricity, water supply, cook fuel, telephone availability, Internet, sewage facility and building structure are considered for this research.

The 2005 to 2017 Household level survey contains a total of 426,395 Individuals and 66% are in owner occupation. There were no adjustments made to the dataset.

6.12 Variables

The variables used in the econometric analyses of demand for mortgage finance are described in detail below. These covers expected relationships, measurements and sources with the household financing decision.

Mortgage Loan Amount: This is the amount of mortgage loan the household obtained towards the purchase of their desired property. The market value of the total mortgage debt is used to understand and measure the household debt burden. This is calculated as the current value of mortgage loan amount.

House Value: The house value is the addition of the mortgage loan amount and the initial deposit of the property. The house value is constructed as the 70% of mortgage loan amount and 30% of the house deposit. The demand for mortgage finance is expected to have a positive relationship to house value.

Estimated Income: Household earned income is the total income earned per hour in a month of the household head. This variable represents periodic income earned from both the main occupation and from additional job in other sector different from the main occupation. Other earnings from investments, interest and dividend were not captured. Information on the income of the partner or spouse were not captured. However, it was argued that if the household income restricts the use of mortgage finance to an amount below the household demand, then the larger amount of income should be associated with higher levels of mortgage debt.

Ownership: This variable captured the ownership status of the household residence. This

determines if the households own or not own their current property. The households that acquired their housing units with a mortgage lending arrangement were known to have owned their properties even if they are yet to pay up the mortgage loans. Households that owns their property with a mortgage have the value of one and otherwise, a zero value for those that do not owe their property.

Migration: This variable captures the impact of rural-urban migration on the demand for mortgage finance. This movement could be from Urban to rural or rural to urban. The variable was coded as household dwelling in rural location as 1 while those living in the urban areas was coded as 2. The research expects more households in the Urban centre to demand for mortgage finance.

In the Nigeria context, the demand for mortgage finance should be intensive in the Urban areas because as household migrate to the Urban cities to get access to better infrastructures, demand for housing increases and the reverse is the case in rural areas. Theoretically, demand for mortgage finance in the urban area should be more than the rural area. This is a significant variable because the urban areas in Nigeria is 52% of the country and the rural areas is just 48% (World Bank, 2015). In term of measurement, households in the Urban areas should have a value of 1 and otherwise zero value was applied.

Paloma and White (2012) studies which examined the impact of migration on the United Kingdom and Spanish market. The study reviewed that migration is more important in the Spanish mortgage market and thus enhance the liquidity compared to the UK market. In

Location: The variable considered the location of the household as having impact of their demand for mortgage finance. This research expect that the regional differences can influence household consumption of housing and its demand for mortgage. This is because in term of education, infrastructural developments, average earners and cultural beliefs in different regions can affect and restrict their access to the required finance needed in the mortgage market. The research expects the Southern part of Nigeria, due to high level of educational development, better economic environments and cultural perspectives which is suitable, thus encourage the demand for mortgage finance to the Northern part of Nigeria.

Utility Variables: Under the section, the role of infrastructure development on the demand of mortgage finance was examined. These utilities such as electricity, water supply, cook fuel,

internet, phone availability that are peculiar were considered. This research will examine the impact of the availability or otherwise of the infrastructures on the demand for mortgage finance. Where these are available, that should influence household decision to enter owner occupation. The above-named infrastructure in term of measurement had a value of 1 where they are available and zero where they are not.

Religion: Nigeria is secular state where there is freedom of religion and association. Three religious belief are predominant which are Christianity, Islamic and traditional belief. Household religious belief can influence their consumption pattern, for instance, Islamic belief is not in support of borrowing with interest which could discourage or restrict access to mortgage finance. The other religious beliefs like Christianity and traditional belief does encourage the principle of intertemporal substitution. This research will investigate the influence of religion on household consumption particularly the mortgage finance in the Nigeria context.

Other Household Characteristic Variables: There are several variables used as proxies for unobservable household risk preferences.

The age of the household head is considered a continuous variable and relates to the person captured in the household level micro survey as head in the dataset. The household head that was from 18 to 60 which was considered to capture the life cycle effect. In addition to this, age of the household first marriage was included.

Each of the household is classified as married or single. The sex of the household head is also considered, if the household head is male or female. The level of Education is captured by number of years spent in schooling (Years of school), literacy and educational attainment or not. Number of people living in the household is captured by people and in addition, age of the eldest own child and the age of the youngest child were also considered. Household wealth in form of intergenerational transfer was captured by parrule which is household that have access to parent wealth or not.

Household employment status of the house was considered in addition to the industry in which the head of the household is employed or not. The number of the wives in the household was considered in the household as this can improve the ability to access the finance needed to purchase their desired property and thus, improve their credit risk where

the spouses are financial contributors.

Because of the life cycle effect, which is critical to borrowing for mortgage finance, this research provide separate estimations for sample subsets based on age.

6.13 Model Specification

Equation (5) and (6) present the empirical specifications of the model with the variables being empirical proxies based on the theoretical perspective of the variables identified and in other instances used for empirical estimations in the previous studies. They are:

Ling and McGill model

$$House\ Value$$
$$= f\ (Market\ Value\ Mortgage\ Debt, Earned\ Income, Two\ wage\ earners, Age\ of\ head,$$
$$Age\ of\ head\ squared, Martial\ Status, Female\ Head\ of\ Household, No\ of\ Childern,$$
$$Race\ of\ Household\ head, Type\ of\ housing, Regional\ Differences, Number\ of\ Rooms)$$

Theoretical Model- Demand for Housing adopted

$$House\ size = F(PERSONS, URBAN, GEOGRAPHICAL\ DIFFERENCES,$$
$$Alt\ Source\ of\ Finance, ELECTRIC, WATSUP, COOKFUEL, ROOMS, HHTYPE, NFAM,$$
$$HEADLOC, PARRULE, POLYMAL, AGE, SEX, MARST, AGEMARR, REL, LIT,$$
$$YRSCHOOL, EDUCNG, EMPSTAT, INDGEN, EMPSECT, ESTIMATED\ INCOME) \qquad 5$$

Empirical Model

$Rooms = \alpha + \beta_1 persons + \beta_2 urban + \beta_3 GeographicD + \beta_4 watsup + \beta_5 electric + \beta_6\ watsup + \beta_7 Cookfuel + \beta_8 hhtype + \beta_9\ nfam + \beta_{10} headloc + \beta_{11} parrule + \beta_{12} polymal + \beta_{13} age + \beta_{14} sex + \beta_{15} marst + \beta_{16} agemarr + \beta_{17} rel + \beta_{18} lit + \beta_{19} yrschool + \beta_{20}\ educng + \beta_{21} empstat + \beta_{22} indgen + \beta_{23} estimated\ income + \beta_{24} hrsadd + \varepsilon$

Ling and McGill Model

$$MD = F(\ House\ Mrk\ Value, Earned\ Income, Two\ wage\ earners, PWIHOUSE,$$

$$Age\ of\ Household\ head, Age\ of\ Hh\ Squared, Martial\ Status, College\ Education,$$

$$Number\ of\ Children, Race\ of\ Hh\ Head, Location)$$

Theoretical Model - Demand for Mortgage Finance

$$MD = f\ (\ Estimated\ Income, Migration, Age\ of\ Head,$$

$$Age\ of\ Head\ Squared, location\ of\ Hh\ head, marital\ status, age\ of\ first\ marriage,$$

$$Yrs\ of\ school, Literacy, Educng, Persons, Polymal, Elect, watsup, Cookfuel,$$

$$parrule, Religion, Employment\ status, Inden) \qquad\qquad 6$$

Empirical Model

$$
\begin{aligned}
Ownership =\ &\alpha + \beta_1 rooms + \beta_2 persons + \beta_3 urban + \beta_4 Geographical\ dd + \beta_5 electric \\
&+ \beta_6\ watsup + \beta_7 Cookfuel + \beta_8 hhtype + \beta_9\ nfam + \beta_{10} headloc \\
&+ \beta_{11} parrule + \beta_{12} polymal + \beta_{13} age + \beta_{14} sex + \beta_{15} marst + \beta_{16} agemarr \\
&+ \beta_{17} rel + \beta_{18} lit + \beta_{19} yrschool + \beta_{20}\ educng + \beta_{21} empstat + \beta_{22} indgen \\
&+ \beta_{23} Estimated\ Income + \beta_{24} hrsadd + \varepsilon
\end{aligned}
$$

In the above case of the two-simultaneous equations model, the dependent variables are from the left-hand side of the equation and thus appear with their explanatory variables which are selected based on the theoretical evidences from previous studies and the peculiarity to the Nigeria economic environment which can influence the demand for mortgage finance and demand for housing.

The dependent variable in the house size equation in equation (5) is the house size of the property. This is used to capture the size of the accommodation and value of the property. The house size of a property as a proper explanatory variable in a regression equation was used to capture the determinant of housing consumption.

The dependent variable in the mortgage demand equation in equation (6) is to determine if the household own or not owed the property. This is a binary indicator which is used to capture whether the household have used a mortgage finance to purchase the property and this has to value of 1, otherwise, the value of the dependent variable will be zero and thus indicate that the household did not have a mortgage. Hutchison at el (2014) studies have used a binary variable as a dependent variable where household choices were investigated.

The following are included in the equation as independent variables. The household head age (AGE), household's size, household's structure, number of families in the household aim to consider the life cycle effects in the household mortgage decisions. For instance, Ling and McGill (1998), Follarin and Dunsky (1997), Jones (1995), Tiwari and Hasegawa (2000) Leece (2006) studies emphasized these variables in their models which considered life cycle effects on the mortgage decisions. In addition to this, the impact of intergeneration transfers was considered. The variable was captured as PARRULE. Modigliani (1988) emphasized that household inherited savings from their parents is more likely to be better off compared with one without such saving and the availability of such savings should enable household to easily climb the property ladder.

The size of the mortgage debt which was captured with the size of the accommodation is included in the econometric estimates to understand the impact on liquidity constraints on the household ability to access mortgage and this is because the size of mortgage debt is related to the type of mortgage contract the household gets (Brueckner, 1994 and Lecce, 2004).

Marital Status was also included in the empirical argument to capture the influence of demographic factors on the household decision on mortgage choice decisions. (Leece, 1995,2000b, 2006 and Colibaly and Li, 2009). Other variables considered to capture the influence of demographic factors are number of family size, sex, household head location, age at first marriage, household with more than one wife. These variables are important due to the nature and structure of the Nigerian economy and cultural perspectives which can influence household demand for mortgage finance.

The inclusion of the utility variables such as electricity, water supply, phone in the model was used to capture the impact of infrastructure development on the household mortgage decisions. The availability of these infrastructure should influence household to buy their desired property. In the Nigeria context, long decay of infrastructural development during the military rule which lasted for thirty years has made the level of infrastructures below the standard and such could influence household mortgage decision.

The impact of geographical differences regarding household mortgage debt was captured with regional difference variable named GE01_NG and at the state level, state difference variable.

This is used to capture the impact of difference in resources at various states on mortgage choice decisions. This will account for variation in income, house prices and easy access to finance at the different regions (Hutchison at el, 2014, Leece, 2006 and Ling and McGill, 1998).

The urban-rural migration impact on household mortgage choice was captured by URBAN. Jones (1995) emphasized that movement of household to urban cities have increased the consumption of occupied homes. This pursuant on households' desire to increase consumption in response to an unexpected increase in net wealth and thus increasing household wealth.

The impact of the education was also considered on the household mortgage decision. The level of literacy, years of education and educational qualifications obtained were the variables which will be used to determine the influence on these on household choices. Leece (2010, 2006), Follarin and Dunsky (1997), Ling and McGill (1998) studies emphasized the impact of years of education on household mortgage decisions and due to the nature of the Nigeria society, which is centred on academic qualifications, the educational qualification variable was considered.

The household affordability index was captured by the estimated income earned work related activities and thus can influence the household regarding their mortgage decisions. The following variables were considered for the purpose. Employment status, Industry status, ownership of business enterprises, hours worked in main occupation and hours worked in other second job.

The inclusion of the employment status will be used to capture the impact of unemployment on the model. This is due to the high ratio of unemployment in Nigeria. Industry status variable introduced the variation in Income earnings from different sector which could impact the financial sustainability of the households. The ownership of business enterprise variable captures the impact of the informal sector on the mortgage market. This variable is particularly important to this study due to active role of the informal sector in Nigeria and the only way to capture this in the model is to examine how ownership of business enterprises contribute to the ability of household to demand for mortgage finance. The household level of income is determined by the number of hours worked in main occupation and ability of the household to have a second job should give a better credit risk to access mortgage finance.

6.14　Method of Estimation

The house size equation and mortgage demand equation identified above, are jointly estimated using a simultaneous equation limited dependent variable model. The papers of Nelson and Olson (1978), Amemiya (1979) and Ling and McGill (1998) have established and proposed the method for the generalization for the Tobit model to a simultaneous-equation framework when one or more of the equations contains a censored dependent variable. This was also evidenced in Hutchison at el, (2014), Leece, (2006).

This research adopts adopted a two-stage procedure where the first step include a reduced form of house size equation which is estimated by ordinary least squared and a reduced form of mortgage demand equation is estimated with a Probit specification. The second step involves the structural estimation of house value equation and mortgage demand equation is performed using the predicated values of M_i^* and H_i from the first step.

The Apriori Condition

The a priori condition in this section will be used primarily to denote the foundations upon which known proposition develops. This means the expected signs of the coefficients of the variables in the econometric estimation. These propositions are established based on theories and empirical investigation established from previous studies. They are:

Table 6.1   Apriori Conditions

S/N	Categories	Variable Names	Expected Sign for OLS Estimates	Expected Sign for Probit/Logit Estimates
1	Technical Household Variables	Number of Person records in the Household (PERSONS)	Positive	More likely
		Number of Unrelated person in the Household (Unrelated)	Positive	More likely
2	Geography: Global Variables	Urban-rural status (URBAN)	Positive	More likely
3	Geography: Variables	State Difference (GE01_NG)	Positive	More likely
4	Household Economic Variables	Ownership of Dwelling (OWNERSHIP)	Positive	More likely
5	Utilities Variables	Electricity (ELECTRIC)	Positive	More likely
		Water Supply (WATSUP)	Positive	More likely
6	Dwelling Characteristics Variables	Number of rooms (ROOMS)	Positive	More likely
7	Constructed Family Interrelationship Variable	Rule for linking parent (PARRULE)	Positive	More likely
		Man with more than one wife linked (POLYMAL)	Positive	More likely
8	Demographic Variables	Age (AGE)	Positive	More likely
		Sex (SEX)	Positive	More likely
		Marital Status (MARST)	Positive	More likely
		Family Size (FAM)	Positive	More likely
		Number of Children	Positive	More likely
		Number of Children under 5	Positive	More likely
11	Education Variables	Literacy (LIT)	Positive	More likely
		Years of Schooling (YRSCHOOL)	Positive	More likely
		Educational Attainment Nigeria (EDUCNG)	Positive	More likely
12	Work Variables	Activity/Employment Status (EMPSTAT)	Positive	More likely
		Industry general (INDGEN)	Positive	More likely
13	Income Variable	Estimated Income	Positive	More likely

6.15   Statement of the Hypothesis

This section will determine the followings:

- Is household income a contributory determinant of the demand for mortgage finance?

- Does Family size in Nigeria influence the household decision to demand for mortgage finance?

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- Does the educational qualification attained enhance the affordability index of the household to demand for mortgage finance?

- Is the level of mortgage debt finance increasing with age?

- Is being married essential to demand for mortgage finance in Nigeria.

In summary, this section has critically analysed the dataset and based on the dataset, theoretical and empirical model was adopted suitable for the Nigeria mortgage market. Peculiar characteristics were considered, and these formed the background for the empirical investigation of the factors, constraints and limiting factors militating the demand for mortgage finance in Nigeria.

6.16 Modelling the Second Research Question 2 (Identify the regional prevalence factors, characteristics and determinants of the housing market.

Nigeria is a multi-cultural and diverse ethnic community which consumption pattern has been influenced by the level of infrastructural development, education, cultural perspectives, religion, political affiliation, institution influence, family size, population growth, crime, demography, family interrelationship, occupation, income and dwelling characteristics.

This research will investigate the north-south divide in the Nigeria context and critically evaluate how the regional differences influence affect the households living in such areas does impact on their demand for housing and mortgage finance needed to finance their desired properties. In addition to this, Nigeria is made up of thirty-six (36) states and which is sub-grouped into six regions. These regions are made of six states which will be the focus of this study analysis.

Based on literature, the North- South divide are prominent in the areas of educational development, Income distribution, Religion, family size, political association and affiliation, Infrastructural development and strife and sectarian violence.

Educational Development: The educational system in the southern part of Nigeria was developed after the British educational system. This resulted in the higher level of educated households in the southern part of Nigeria and this should translate to better income and life

sustaining job which could enable the households to borrow against their expected future income particularly in the mortgage market. There is a direct link with a system where there is sound educational system and the boom in the property market. This is not the same for the Northern part of Nigeria. Educational system was very slow to pick up. This research will be interested in testing this hypothesis if sound educational system should influence the demand for mortgage finance.

Income Distribution: It has been suggested that the gap between the rich and the poor should not be wide, if income is fairly distributed. In the Nigeria context, it was revealed that out of the Urban residence, 75% are in the highest and fourth income quintile, of which 43.3% are in the highest income group while the 60% of the rural households are classified as poor. Based on this income distribution, this research is of the view that the rural household may find it difficult to access the mortgage market if considering their current income and based on the current situation it may not be up to the affordability threshold set by financial institutions in Nigeria.

Regionally, income distribution of the six geo-political zone clearly show the north-south divide. The southern regions (South East, South West and South South) were economically and financially buoyant compared to the Northern Nigeria (North Central, North East and North West), where more than half of the population are classified as poor. Due to variation in income, the research will test if such variation affects the households in the various regions and impact on their ability to demand for mortgage finance to buy their desired property.

Religion: The role of religion and belief can shape the pattern of consumption of household. The southern part of Nigeria is predominantly Christian which belief is not against the borrowing (Mortgage finance) to purchase their desired property while the Northern part of Nigeria are Muslims which does not encourage borrowing from Commercial Banks because they charge interest on the mortgage funds provided. This research is of the opinion that access to cheap fund may be restricted for households in the Northern part to due to their religious perspective and religion being sensitive to people, such could be a significant influence on the demand for mortgage finance.

Family Size: This is indicated by the number of individuals in a household. The larger the family, the increase in the demand for mortgage finance. The family size of households varies across

the various region in Nigeria. This is partly influenced by Cultural, traditional and religious beliefs. In addition to the above, family size varies across the regions in Nigeria. The impact of family size is based on the argument that the larger the family, the higher should be the demand for more rooms and a bigger property and such should increase the demand for mortgage finance.

Regarding the North-south divide, the research will investigate the influence of family size on the demand for mortgage finance and in addition, a regional investigation will be done.

Infrastructural Development: The role of infrastructural development has been established as a significant influence for household demand for mortgage finance. Such infrastructures availability could influence demand for mortgage finance particularly in Nigeria where the state of infrastructures is poor. In term of the North-south divide, the southern part of Nigeria can boast of a significant level of infrastructural developments which should increase the household's demand for mortgage finance but due to low level of these infrastructures in the Northern Nigeria, it should depress demand for mortgage finance. The investigation of the importance of infrastructural developments across the regions to be carried out to understand the influence on mortgage finance.

The regional differences perspective is critical to the research, if a robust approach is to be given to the constraints and limiting factors in the Nigeria mortgage market. The understanding of the regional prevalent characteristics and determinants of the housing market is very important to proffer solution to the market. And this research will ensure that suitable solutions peculiar to each region are enumerated.

6.17 Data Source

Household level micro survey data from 2005 to 2017 were used to critically investigate the regional differences in the household demand for mortgage finance. The dataset was extracted into the six geo-political zones which will be instrumental to determine the prevalence characteristics, determinants and limiting factors peculiar to the regions in the Nigeria context.

6.18 Method of Estimation

To understand the regional prevalence characteristics, problems and determinants of the demand for mortgage finance in Nigeria, this research applied econometric models to answer this research question.

The following process was followed.

Firstly, the dataset was extracted into two parts. The first part was to extract data from the North and South part of Nigeria. This should enable this research to identify prevalence problems and determinants in the Northern part of Nigeria and the Southern part of Nigeria. The second part was to extract data for the six geo-political regions. It is worth mentioning here that each of the regions are group of states which have similar cultural orientation, similar local languages and beliefs which can influence the consumption pattern particularly the mortgage finance. Each region comprises of five to seven states in a group and the states are independent.

Secondly, the econometric models used above (revised Ling and McGill Model for both demand for mortgage finance and demand for housing in equation 5 & 6) will be applied to the dataset.

In summary, these processes will enable this research to answer this research question.

6.19   Modelling the third research question 3 (What is the impact of rationing on the demand for mortgage finance.

The impact of rationing in the mortgage market cannot be overemphasized. The intensity of the rationing would impact on the number of the households that would access the mortgage finance in the mortgage market and consequently, could affect the tenure choice, levels of housing consumption and life cycle planning of the households in an economy.

This research will investigate the impact of credit rationing in the Nigeria mortgage market. This section will be grounded on two papers which are Meen (1990) and Leece (1995, 2004). The researcher got the idea from the studies.

Firstly, Meen (1990) examined rationing in the UK economy prior to the 1980s. This was the period when building societies were in control of what happens in the mortgage market. But in 1980, there was financial deregulation which allowed Financial Institutions particularly

Banks to get involved in lending in the mortgage market and it was evidenced that the introduction of financial deregulation increase the competition among mortgage lenders and consequently, the strict lending criteria's were relaxed and this led to the increased in the number of households that were granted access to the finance needed to buy their desired property.

What was deduced from Meen (1990) paper was that when there is a structural shift in the financial and mortgage market, that could result in an increase access of households to mortgage finance. In the Nigeria context, there was structural shift in the financial market when there was an increase in the bank capitalization in 2005 from 2 billion to 25 billion and theoretically, an increase in bank capitalization should increase the supply of funds for mortgages in the mortgage market. Lecce (2004, P 113) emphasized that change in the financial recapitalization should facilitate the mortgage market adjustments and efficient pricing which should increase access of households to obtain mortgages and reduce rationing. This research will investigate if rationing ceased when there was bank recapitalization in Nigeria in 2005 or not.

In modelling the impact of rationing on the Nigeria mortgage market, empirical evidence on mortgage price behaviour and its integration on the capital markets should be discussed and theoretical perspective discussed. The theoretical perspective revealed that the growth in the securitisation of mortgages and the increase in sub-prime lending increased the activities of the capital market and thus lead to the global financial crisis in the 2007-08 and learning from that epic event, the mortgage credit rationing intensified. However, it is worth mentioning that impact on the financial crisis was minimal on the Nigeria financial system and due to the intervention of Central Bank of increasing the capital base and introduction of safety nets, this research will be interested to know if such structural change has reduced the intensify of rationing in the mortgage market.

The work of Linnemann and Watcher (1989) provided a methodology which other studies conducted in different countries mirrored (Leece 2000a; Moriizumi 2000; Bourassa 1995) The fundamental here was that two periods of time were considered, and the samples were divided into constrained and unconstrained households. The paper used two binding constraints as yardstick to differentiate the households which are income constraint in term of loan-to-income ratio or wealth constraint which could be in form of loan-to-value ratio, or

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down payment requirement. The empirical evidence from this study revealed that rationed households were detected by comparing estimate of their housing demand from the unconstrained households. A probit model was used to estimate the impact of rationing on home ownership. The finding was that impact of income and other control variables fell drastically when measure of rationing was introduced into the model. The ability of the household to borrow was reduced with the impact of rationing.

In 1997, Linnemann et al, applied the same model on another survey, the result was similar to their previous studies and it found out that income and wealth constraints impact on household ability to access mortgage finance and thus, they are rationed.

What can be deduced from the studies above are: firstly, the use of various surveys in the same study and conducted a test for rationing in the post-financial deregulation era, after a structural shift. Secondly, this show that using various surveys datasets, comparative studies of pre and post can be done to test the impact of rationing in the mortgage market.

Most of the studies that used household level micro data (cross-section) and have modelled a simple discrete model which have taken a probit or logit specification to determine the impact of rationing on household mortgage/housing choices.

The focus of the studies has been on impact of mortgage underwriting criterion on the chance that households will get their desired home ownership. Recent studies such as Reid et al (2017) has emphasized the role of ethnicity and race as instrumental to household being rationed. Nickerson and Jones (2016) added to this above, gender discrimination was also used as a tool to ration households. However, there has been a neglect of the interdependence of the discrete and continuous choices. This means that a household decide to enter owner occupation and the decision of the size of mortgage debt. In this type of modelling, theoretical studies on mortgage demand have taken the tenure choice as given and a double hurdle model used by Cragg (1971), Leece (1995a, 2000, 2004) to estimate the mortgage demand with rationing.

The framework of the model provides the approaches to the estimation of the model. There are two approaches specified. (See pages 76 – 84 for detailed discussion on Leece Model)

Based on this argument, this research will estimate the impact of rationing on demand for

mortgage finance with a double hurdle model.

6.20 Estimation Procedure

In order to investigate to the impact of rationing in the Nigeria mortgage market, a double hurdle estimation technique will be adopted. A two-stage procedure will be followed.

The first step is to use a probit model for the discrete choice and the second step is the adopt a truncated regression on the non-zero observations.

Data Set

Household level micro dataset will be used for the section of the study (See detail above).

Model Specification

Probit Model

$$YMOR = \alpha + \beta_{1n}\chi_{1n} + u$$ Where $\chi_{1\ldots n}$ are the independent variables?

The Truncated regression model

$$HMOR = \alpha + \beta_{1n}\chi_{1n} + u$$ Where $\chi_{1\ldots n}$ are the independent variables?

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6.2   Variable Names and Labels

Dependent Variables	Description
YMOR	Household has a Mortgage= 1, not = 0
HMOR	Number of rooms
Independent Variables	
Age	Age of the household head
Income*	Household head Income
Ration*	Housing decision made pre 2005= 1
Employment Status	Employed = 1
Interest rate	MPC interest rate
Mortgage Interest rate	Interest rates to be charged by lenders
Ration*Income*	Rationing Dummy*Household Head Income
Ration*Mortgage Int rate*	Rationing Dummy*Mortgage Interest rate
Ration*Employment*	Rationing Dummy* Employment status
Marital Status	Household head is married= 1
Sex	Household head is male=1
Rooms	Number of rooms in the property
FAM	Family Size
Loan	Loan to Value ratio
Ration*Loan	Rationing Dummy*Loan to Value ratio
Education	Number of years in School, qualification obtained and literacy level
Parrule	Wealth
Polymal	Man with more than one wife
Infrastructures	Such as water supply, electricity
Location	Urban = 1 otherwise = 0
Industry	Industry the household works
Geo_NG	Geographical Difference

*Computed from the dataset in the Surveys

Variable Definition and Measurement

The dependent variable for probit model which considers household discrete choice of having a mortgage (YMOR=1) or not having a mortgage is captured as (YMOR=0). Households with YMOR = 0 are referred to as being rationed.

The house size (HMOR) captures the size of the property the household will buy with mortgage finance. This assumes that the more mortgage finances the household obtains, the bigger the property they will buy.

The rationing dummy was used to capture the impact of rationing before and after a structural shift in the mortgage market. The dummy (RATION= 0) for pre 2005 before the increase in the bank capitalization, which was characterised with shallow financial depth, many banks with small financial capacity and consequently, many households were rationed and their demand for mortgage finance restricted. In the post 2005 (RATION = 1), the financial depth was deep, and the market becomes financially sound. Theoretically, rationing should cease after the recapitalization of banks. The structural shift in the financial market is expected to facilitate the entry into owner occupation and lead to an increase in the size of mortgage balance demanded.

RATION was used to interact with household head Income (RATION*HOUSEHOLD INCOME), mortgage Interest rate (RATION*MIR), employment status (RATION*EMPLOYED) and Loan to value (RATION*LOAN). The interactions are used to detect if there are changes in the slope coefficients of the variables and to adjust for the household behavioural changes after the bank recapitalization exercise. There should be a significant change in the mortgage interest rate and loan to value because the impact of competition in the financial market should drive down the pricing of mortgage contracts and many households should have the access to funds needed in the mortgage market.

Employment status was considered because a household head who is not in a full-time employment is very likely to rationed and Employed household head = 1, which means that they will get a mortgage and Unemployed household head = 0, which means they are rationed.

Interest rate is used to capture the cost of borrowing and where this is high, this will impact on the affordability criteria of the household and they will be rationed. A low interest rate

should reduce impact of rationing on the household demand for mortgage finance. This was obtained from the Central Bank of Nigeria. The mortgage interest rate mirrors the MPC interest rate and it is also higher than the MPC Interest rate, which further reduce the number of households that get on the property ladder. However, a reduced mortgage interest rate should reduce the impact of rationing, as this increase the affordability index of the households.

Household head Income was estimated based on the number of hours worked in the main occupation and in other employment different from the main occupation. As the household income increase, the more their chance of getting a mortgage. On the other hand, where the household heads income is low; they will be rationed. Polymal is the household with more than one wife which translate to more income for the household as more income streams are coming in. Industry was used to capture the various industry where the households are working, the more buoyant the industry, the less likely the household will be rationed.

Parrule captures household that have endowments and was used as a proxy for wealth. Age of the household head, family size, Education and sex were considered to capture the life cycle effect of household decision on the impact of rationing on the mortgage market.

The inflation was used to capture the changes in the house price. The regional difference was used to capture the different impact of rationing on the demand for mortgage in the different regions of Nigeria. For instance, it may be difficult to access mortgage finance in a region or opportunities to rent may be available. It could also be due to size of mortgage finance required for the same property in different locations.

The availability of infrastructures on the property could be intensify rationing, where these infrastructures are available, it may reduce the additional cost for home improvement. Where these are available, infrastructure = 1 which should reduce the impact of rationing and where these are not available, infrastructure =0.

This section has explored the key variables to be used to estimate the econometric model of double hurdle model. The impact of rationing on mortgage demand and the effects of a structural shift financial system and ameliorate the impact of rationing in the mortgage market.

6.21 Modelling the fourth research Question: To critically investigate and access the role of financial Institution particularly Banks in the supply of funds in the mortgage market.

The role of finance is critical to the development of the mortgage market. To determine the model which will be used to investigate the role of financial institution in the supply of funds needed in the mortgage market, theoretical models and empirical models were discussed and analysed. Lending is one of the two critical functions of financial Institutions and its ability to grant the long-term funds is crucial to the development of the mortgage market.

The performance of a financial Institution determines its ability to grant long term credit to the households to buy their desired property. Where the financial position of Banks is not satisfactory, the ability will be curtailed.

The section was grounded on the studies of Demirguc-kunt and Detragiache (1998), Anthanasoglou, Brissimis and Delis (2005), Flamini, McDonald, and Schumacher (2009), Awojobi and Amel (2011), Akinwunmi (2009). Based on these studies (discussed in detail in chapter four), a revised model was used to determine the constraints in the financial system which prevent the Banks from granting the long-term funds needed in the mortgage market.

Based on the above studies various model have been used to analyse the bank performance in many economies both developed and emerging. What is common to the models is that only sound financial institutions particularly banks will be able to perform its fundamental functions of financial intermediation. It could also be deduced that only a financial institution in sound financial position can grant the long-term funds needed in the mortgage market.

The theoretical and empirical perspective discussed, have evidenced that banks' ability to perform its financial intermediation function (accepting deposits and particularly granting loans) depends on the bank-specific factors, industry specific factors, macroeconomics factors and institutional factors. And the validity of this statement will be tested in the Nigeria context.

Having critically analysed the various models used in the studies above, it is important to note that the adoption of any of the models may not be adequate to investigate factors/constraints that will influence the supply of mortgage finance. However, in order to achieve this objective, this research will introduce a model that will include bank-specific determinants, industry

specific determinants, macroeconomic determinants and institutional determinants. This model will be used to analyse the impact of supply of mortgage finance of the four determinants which other studies have not used.

The model will be specified as:

$$LOAN_{it} = \alpha + \sum_j \beta_j X_t^j + \sum_m \beta_m X_t^m + \sum_n \beta_n X_t^n + \sum_s \beta_s X_t^s + V_{it}$$

Where $LOAN_{it}$ is the loan amount given by banks to the households in a year, X_t^j captures the vectors of bank specific determinants, X_t^m represents the vectors of industry specific determinants, X_t^n is the vectors of macroeconomic determinants and X_t^s represents vectors of institutional determinants.

The empirical model

$$loan = a + b_1 EA + b_2 CrRisk + b_3 Mix + b_4 OpExp + b_5 S + b_6 S^2 + b_7 Mrkpower \\ + b_8 Ownership + b_9 GdpPc + b_{10} GdpGr + b_{11} Inflation + b_{12} CP + b_{13} CPN \\ + b_{14} IR + b_{15} ROI + b_{16} GovtPolicy + b_{17} Pol + b_{18} Corruption + u$$

Table 6.3   Supply side variable description

Determinants	Variables	Descriptions	Notation
Dependent variable	Loan amount	Total loan granted to household each year under review	LOAN
Bank-Specific determinants	Capital	Equity /assets	EA
	Credit Risk	Loan Loss provision/loan	CrRisk
	Operating expense management	Operating expenses/assets	OpExp
	Size	In (Real Assets) and	S
Industry-Specific Determinants	Market power/concentration	Individual bank loans/country's domestic credit.	MrkPower
	CPS/GDP	private credit relative to gross domestic product (GDP)	CPS/GDP
	Private bank ownership	Dummy Variable to capture if the banks are totally privately owned is one, otherwise, zero	DmPriPub
	Cyclical Output	Gdp growth rate	GdpGr
Macroeconomics determinants	Inflation	CPI growth rate	Inflation
	Crude oil Price	Crude oil price	CP
Institutional determinants	Development of Insurance sector	Insurance	DoI
	Government Policies Effectiveness	Government Policies formulation and Implementation index	GovtPol
	Political situation/stability	Political Instability Index	Pol
	Corruption	Control for corruption index.	Corruption

6.22   Variable Descriptions

This section looked at each of the variables in context and examined the definition, sources and how it was measured. Finally, the impact of the variable in the model was discussed. The discussion of the variables was subdivided into four subsections, which are: Bank-specific determinants, Industry-specific determinants, Macroeconomic determinant and Institutional determinants.

Bank Specific Determinants

Loan: This variable captures the loan amount granted the households in the Nigeria economy. This is total loan amount which financial institutions in Nigeria granted to the households as mortgage finance. This variable is an aggregated value of all the mortgage finance granted by all the financial institution in Nigeria. This data was obtained from the Central Bank of Nigeria and it will be used to test the ability of financial institution to grant the long-term funds needed in the mortgage market.

Capital: This is used to capture the bank financial position which can influence it performing its role of granting long term credit like mortgage finance. It has been argued that well-capitalised banks don't borrow to fund their assets and thus, faced lower costs. Where Banks are adequately capitalized bank, they are less of a risk taker, thus meticulous in the credit process and grant loans that are less risky. On the other hand, less capitalised banks are classified as a risk averse. This category of financial institutions is engaged in banking activities to keep them above board and change higher interest rate on the loans granted. In this regard, the relationship should be positive mortgage loan and Bank capital. This could further be strengthened by the bank capitalization exercise in 2005 and mergers and acquisitions of banks within and outside Nigeria. This variable is captured by equity to assets. Where equity is the difference between total assets and total liabilities. As the bank liquidity increases, the ability to provide the needed funds for mortgages increase. It established a positive relationship.

Credit Risk: This is the ratio of total loans to all deposit and short-term funding. This determines the bank exposure and set the rate of asset quality deterioration. The variable was captured by loan loss provision to loan. This is because as the bank loan loss provision portfolio increases, the rate at which the bank grant loan term funds for mortgage should reduce. However, there should be negative relationship between credit risk and loan amount. The higher the credit risk, the lower the loan amount.

Operating Expenses: A financial Institution operational expenses are cost incurred in the day to day running of the banking business. These includes operation cost and other expenses such as taxes, depreciation and staff cost. The higher these costs, that limits the banks

financial capacity to grant long term loan like mortgage finance. Thus, the expected relationship should be negative. This can be measured as expenses to total assets.

Size. The size of the bank determines its risk taken ability. Large sized banks can withstand shocks/deterioration in the financial position and still be able to perform their function of intermediation, in this case granting of loans. Modern theory of intermediation predicts that a large bank leverage on its size (economies of scale) to reduce the cost of operations, which increases its profit and thus, increase its financial position to grant more credit. Anthanasoglou at el (2005) study emphasized that extremely large bank could increase the bureaucratic and administrative control which make decision longer than necessary. Such is a negative impact of size in respect of customer demand for mortgages. Bank size will be captured by using logarithm of total assets.

Industry Specific Determinants

Market power: There has been arguments that market power could influence the supply of funds for mortgages. Rodrigo and Ramana (2012) study evidenced it that banks are more likely to expand credit when faced with competition and restrict loan when they have market power. This proved the market power hypothesis which states that "increased market power results in restricted loan supply and higher lending rate, thereby intensifying credit constraint" (Ryan at el, 2014). Since market power restrict supply of loan, it is important to investigate if such is a contributory factor in the supply of funds in the mortgage market in Nigeria.

Market power was captured by the ratio of each bank's total outstanding loans to the net domestic credit of the country. The measure of concentration was also captured by using managerial inefficiency captured by the log of overhead costs. This is because the high operating cost in sub-Sahara Africa indicate lack of competitive pressure.

Ownership: The argument between the ownership status of banks and the ability to grant long term loan such as mortgage loan exist due to spill over effects from the performance perspective. The privately-owned banks are more profit-oriented and tends to achieve that in the short term but the publicly owned banks are not always profit driven but are interested in providing other values which the privately owned bank may not be interested in. The Nigeria mortgage market is not an exception. Most privately-owned banks try limiting their portfolio

of mortgage loans as their activities are short term in nature. This became pronounced after the 2005 bank recapitalization exercise. In this case, this research used a dummy variable to capture this effect, the value of the dummy equal 1 for periods before 2005 bank recapitalization exercise and otherwise zero.

Macroeconomic determinants

The performance of financial institution is not independent from the macro economy. Many studies have argued that ability of banks in performing their function of financial intermediation in this case of granting of mortgage loan is dependent on the performance of the economy (Demigue-kunt and Detragiache (1998), Anthanasoglou at el (2005), Flamini at el (2009). This made it justified to include those variables because bank's ability to grant long term credit are expected to be sensitive to them. Based on literature on bank risk, critical variables were highlighted which will be used to evaluate and access the impact of macroeconomic variables on bank ability to create mortgage loans.

Cyclical output: The economy circumstance experienced in a country determines the ability of financial institutions particularly banks to meet the demands for mortgage finance. Thus, this implies that there is a direct relationship between business cycle and the supply of funds for mortgages. It is being argued that banks' lending decrease during cyclical downswings (recession). This is because the period is characterised with increased risk as credit quality deteriorates and default rate increases. This implies that the loan loss provision of banks will increase, thus eroding their profit and a non-profitability financial institution cannot perform its financial intermediation function of granting mortgage finance. However, during period of economic boom, the demand for credit and other credit activities tend to increase. This made it important to investigate if business cycle have any significant impact on the supply of mortgage finance in Nigeria. GDP growth will be used to capture for the cyclical output effect.

Inflation show the general increase in the price level. As the price level increases thus, affecting house prices, banks tend to increase the supply of funds for mortgage finance as the income received on such will increase their profit. It is being argued that anticipated inflation tends to increase banks profit. This is because if such future movement is anticipated, the bank can transfer this to the household through raised interest rate. On the other hand,

unexpected change in the country's inflation will raise costs to the bank because such unexpected change may not give the banks enough time to adjust their interest rate. This research expect inflation to have a positive relationship with the supply of funds for mortgage funds.

The price of fuel and price of a commodity index were considered as an important variable due the nature of the Nigerian economy. The Nigeria economy is a mono product economy which mainly depend on oil. Oil industry is the major revenue earner which most economic activities revolve around, fluctuation on fuel prices do have significant economic activities such as banking industry, construction, trading, exchange rate etc. This research expects a positive relationship between supply of mortgage funds and a rising price of fuel and a fall in fuel price should, slowdown in the economy and shortage of funds.

Institutional determinants

This research identified measurable institutional factors that are identified from literature and thus investigated their impacts on the ability of financial institutions to lend the needed funds in mortgage market in Nigeria. The following institutional determinants were considered:

Government Policies Effectiveness: This considers the role of government policy reforms and how such policies can impact on the mortgage market. Policies in the Insurance sector and the banking sector were considered. Firstly, Insurance prevent loss that could occur in any business venture. A robust insurance system in place on mortgage loans will give an assurance that any loss will be recovered thus, providing a form of credit protection to the mortgage lenders. Akinwunmi (2009) argued that a robust mortgage insurance system should improve lending, make the loan affordable as the risk will be priced very low and thus enable households to access high LTV mortgages. In the long run, asset quality will improve, so also market liquidity, robust underwriting process and transfer of risk from the banking sector to insurance sector which will enhance the stability in the financial sector. During the bank recapitalization exercise of 2005, part of the implementation strategy was the reenergizing of the insurance sector due to the enactment of the national deposit insurance scheme to mitigate losses that could occur as a result of banking business. From the theoretical perspective, the presence of mortgage insurance should create incentives for more supply of

mortgage funds (Demirguc-kunt and Detragiache (1998).

Secondly, an institutional policy was introduced in 2004 to increase Nigerian bank capital from N2 billion to N25 billion by the end of the financial year of 2005. The monetary authority strategy was to develop global financial institutions that can compete with its pairs in the world. The recapitalization of banks should broaden scope of banking business, increase capital base and stock market participation, increase in activities in the petroleum sector and real estate sector (Awojobi and Amel, 2011). In addition, an increase in bank capital will lead to greater diversification and thus increase lending in the mortgage market. This research will capture the impact of increase in bank capital on the supply of mortgage finance, the role of mortgage insurance in Nigeria and how effective government policies are in addressing the issues. The Government effective indicator captures the quality of policy formulation and its implementation. It also measures the credibility of the government's commitment to such policies. An effective government policy formulation and implementation should influence the development of the mortgage market and an ineffective policy will depress the mortgage.

Another institutional determinant significant to this section in this research is **political stability**. The Nigeria nation have been governed over the years by the military which create decades of corruption, mismanagement of revenue from oil etc which lead to different ethnic groups agitating for the development of their regions. Such agitations have led to social unrest in the regions which has divided the country by religious, ethnic and tribal sentiments. Banks are reluctant to grant mortgage loans in states/regions that are experiencing turmoil and violence and those that are likely to experience that based on religious sentiments. This become more pronounced after the 2007 presidential election. The research used political stability and absence of violence/terrorism from the worldwide governance indicators. This captures the perception of the likelihood of political instability and politically motivated violence including terrorism. The mortgage market can only develop in an economy where there is a stable political atmosphere suitable for the development of mortgage market while unstable one will constrain its development.

Corruption: This is a disease in the Nigeria society. This involves dishonest and fraudulent conduct, abuse of power from those in public office from the federal, state and local government. The common corrupt practises in Nigeria is bribery. Such misconduct should be

at the heart of any government to curb this social menace. Different regimes have set various targets, tools and machineries in place to control corruption in Nigeria. This will be measured by the control of corruption index. The ability to put measures in place to control corruption should increase the development of the mortgage market and where this is not done, there is going to be slow growth in the mortgage market.

6.4   Sources of Dataset

Determinants	Variables	Data sources
Dependent variable	Loan amount	Central Bank of Nigeria
Bank-Specific determinants	Capital	Central Bank of Nigeria
	Credit Risk	Central Bank of Nigeria
	Activity mix	Central Bank of Nigeria
	Operating expense management	Central Bank of Nigeria
	Size	Central Bank of Nigeria
Industry-Specific Determinants	Market power/concentration	Central Bank of Nigeria, World Bank, Bank scope
	CPS/GDP	World Bank
	Private Bank Ownership	
Macroeconomic Determinants	Cyclical Output	Central Bank of Nigeria, World Bank, Bank scope
	Inflation	Central Bank of Nigeria, World Bank, Bank scope
	Fuel Price	Central Bank of Nigeria, World Bank, Bank scope
Institutional determinants	Development of Insurance Sector	
	Government Policies Effectiveness	World Bank (Ease of doing business)
	Political stability	Institute for Economics and Peace (Global terrorism index)
	Corruption	Transparency International (Corruption perception ranking)

6.23   Method of Estimation

The simple four stage regression model will be used. The first stage will involve only the bank

specific determinants, the second stage will involve: bank specific and industry specific determinants, the third stage will involve: bank specific, industry specific and macroeconomic determinants and the fourth stage will involve; bank specific, industry specific, macroeconomics and institutional determinants.

6.24 Statement of Hypothesis

The following are testable hypothesis in this section.

- To what extent is market power affecting bank's ability to grant the long term needed in the mortgage market.

- Does increase in the bank capitalization have significant impact on the Bank performance.

- Does macroeconomic performance affect the bank ability to grant long term funds in the mortgage market.

- Does volatility in the oil market impact the financial institution in Nigeria

Based on the above processes, the fourth research question will be answered.

6.25   The Fifth research question: Which is to critically investigate the perceived operational efficiency and effectiveness of Banks and the mortgage market.

This section critically investigates the perception of the senior bankers and loan managers of the mortgage market and examine the operational efficiency and effectiveness of their industry in term of mortgage finance provision, identify the inefficiency in the sector and based on this, determine how the identified constraints can be mitigated.

It is based on the premise that only an efficient banking system will provide the needed long-term funds in the mortgage market. And how efficient the banks are, the easier the households can access the mortgage finance. To answer this question, the perception of the practitioners is required.

This section builds on the quantitative assessment carried out and tends to cover aspect of the study that econometric models cannot be used on. However, the understanding of these constraints is prerequisite to identifying critical areas of operations of the mortgage market which needs to be restructured. In addition to the above, it will prioritise the identified constraints by ranking and thereby providing solutions in order of their severity.

As gathered, an effective housing market is associated with many components which makes up the system, which includes: availability of land, adequate infrastructure, cheap building materials, effective government policies, updated building regulations, and the financial market which provides the needed long term funds needed in the mortgage market. The role of finance in the mortgage market cannot be under rated.

The ability of the financial institutions particularly banks to grant the long-term finance is at the heart of this research. This research has dealt with the quantitative side of this in the fourth research question above, however, the qualitative part is yet to be discussed which this section of the research will investigate. The qualitative perspective to this study will provide more in-depth understanding of or a deeper insight on the development of the mortgage market, occurrence or situation by collecting, analysing and interpreting data that cannot be expressed merely in number.

To address the constraints of access to long term mortgage finance in Nigeria, the perception of Senior bankers and Loan Managers on the operational efficient and effectiveness of the mortgage system in Nigeria, with a view to provide an in-depth understanding:

- How the senior Bankers and Loan Managers perceived the operational process in the Nigeria mortgage market?

- Critically understand the cultural perspective that could influence the efficiency of the mortgage market.

- How the Senior Bankers and Loan Managers perceived the constraints in the mortgage market?

- How these constraints can be mitigated?

- How they perceived that the long-term finance can be secured by the households?

6.26   Method of Data Collection

A questionnaire will be used to collect data, and this was chosen to ensure that practitioners' perspective about the subject matter can be taken without prejudice and not influenced by other in the room.

The questionnaire will contain two types of questions which are: closed-ended and open-ended questions. The closed-ended questions will enable the respondents to select a predefined answer on a Likert scale which thus have a quantitative approach and the open-ended questions give the respondents the opportunity to express their opinions on the subject-matter without leading them. This will enable them to give the opportunity to express in-depth ideas which are based on their backgrounds and experiences which the research can draw on. This aspect will be analysed as qualitative data.

6.27   Sample Selection

For the data collection, Senior bankers and loan managers of all the banks in Nigeria were selected. The sample of the questionnaire was circulated to the senior bankers to be surveyed by Chartered Institute of Bankers (CIBN). The Chartered Institute of Bankers (CIBN) has a database of records of all registered bankers in Nigeria and it made it suitable to distribute the online questionnaire through such avenue.

6.28   Designing the questionnaire

Creswell (2017) and Hesse-Biber and Nagy (2017), Saunders et al (2000 p 288) emphasized that the validity and reliability of the data collected, and the response rate is a function of the quality of the design and structure of the questionnaire. In their view, a valid question should result in accurate data collection and a reliable data should be consistent. A good design questionnaire should have a flow, which is that the questions must make sense and thus the answers. A question should be easy to understand by the respondents in the manner the researcher intends to.

Saunders et al (2000, p 290) four stages for a question to be valid and reliable. These are:

Stage 1: Researcher should be cleared and precise about the information required and design of the question.

Stage 2: Respondent should decode the question in the way and manner the researcher intended.

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Stage 3: Respondent should provide clear and precise answer to the question.

Stage 4: Researcher should decode the answer in the way and manner the respondent intended.

This led to the choice of questions, should it be open questions or closed questions.

An open question is set of questions which the respondents are allowed to have their own way without any restriction. On the other hand, a closed question are questions which provides a few alternative answers which the respondents are to choose the best option from.

TYPES OF CLOSED QUESTIONS

The following types of closed questions were considered. These are:

a. List questions

b. Category questions

c. Ranking questions

d. Scale questions

e. Quantity questions

List questions are set of questions that give the respondents list of response to choose any appropriate answers from. This is important when you require respondents to critically examine all the possible options before choosing the appropriate answers. Saunders at el (2000, P 292) argued that this type of questions format may be suitable for structured interview.

Category questions format are designed in such a way that the respondents choose just one suitable answer from a list of possible answer. This choice of a category questions should be very clear and if two answers are similar this could lead to ambiguous responses. However, this may not be suitable for this research.

Ranking questions: This format of question mandates the respondents to rank the answer according to their order of importance. The ranking will be used to judge the impact of the identified causal factors on the dependent variable. Saunders et al (2000, p 295) emphasized

that the instruction should be clear and understood by the respondents. This could be applicable to this research.

Scale questions: This is called rating question mainly used to collect attitude and belief data (Saunders et al (2000, p 295). They emphasized that the likert-style is the most common rating scale. This rating scale ask the respondents of their opinions on the questions asked and the respondents must express their feeling by responding to the statements if they agree or disagree with a four or five points scale. If the rating scale is to collect data that are reliable and consistent, the same order of response categories should be used to avoid confusion. The questions asked should include both positive and negative statements so that the respondents read carefully to provide appropriate response.

Saunders et al (2000, p 296) emphasized that questionnaire that used four-point rating scale compel respondents to express their opinion toward a positive statement. They further argued that a five-points scale questionnaire contains an implicit negative statement and the response to be in between by ticking the "not sure" category. Saunders et al (2000, p 296) emphasized that the phase "not sure" give the respondents a less threatening feeling but to admit that they don't know.

This research will adopt the five-points scale questionnaire format. This is because this will be more productive to ensure reliable data are collected.

Quantity questions: These are questions in which the respondent's response have to be in number to give the amount of the characteristic and based on the number data on their behaviour and/or attribute can be collected. For instance, if the respondents are asked to complete their age in the questionnaire Saunders et al (2000, p 297). However, this means will not be suitable for this research.

Question Code: The importance of coding a questionnaire to make the analysis of data easy. The code needed to be entered prior to collection of data and such could make comparison with other studies easy as well. Since the questionnaire used in this research is a closed question, the researcher pre-coded the questions which five Likert-style rating scale. The following rating scale and the codes are:

Likert-style rating Scale

Likert-style rating	Codes
Strongly agree	5
Agree	4
Not sure	3
Disagree	2
Strongly disagree	1

Saunders et al (2000, p 299) argued that inappropriate coding will affect the analysis. They emphasized an ordered scale of numbers which have the capacity to ensure easy aggregation of response using a computer. The response can be grouped into satisfactory (5, 4 or 3) or unsatisfactory (2 or 1).

6.29 Questionnaire structure

After a comprehensive literature review (Chapter five), the perception of the practitioners which cannot be captured by the quantitative method, thus it is necessary to deeply understand the operational inefficiency and ineffectiveness militating the development of the mortgage market. Based on this perspective, the questionnaire was designed to answer the above research question.

The questionnaire contains six sections. There are: Section A- Bio Data, Section B – Cultural related Matter; Section C – Organizational Specific Issues; Section D – Operational related Matter; Section E – Identified Mortgage Market Constraints; Section F – How to develop the mortgage market.

Section A (Bio Data) – This section gathers information about the respondent's age, academic qualifications, job functions and years of experience. This will enable the researcher to judge the perception of the respondents' experience in the financial service and thus have the capacity to comments on the happenings in the mortgage market.

Section B (Cultural Related Matters) – This section gathers information on cultural related

matters which can be presented from the practitioners' perspectives. Their judgement in determining the impact of cultural issues such as poor saving culture, lack of credit culture, customer unwilling to give vital information, and lack of debt repayment culture, can have on the development of the mortgage market will be identified.

Section C (Organizational Specific Issues) - This section gathers information on organisational specific issues such as Institution perspective to mortgage lending, the use of computer or automation in their daily operations of the Bank, types of mortgage products and their target market, different means of creating awareness/advice the customers on how to finance their desired property.

Section D (Operation Related Matters)- This section gathers information on operational related matter. This capture measures the interest rate charged and the percentage of total loan in the mortgage market. Access to national housing fund (NHF) and the supposed secondary finance mechanism put in place by the government. The ability of the bank to recover loan defaulted and foreclosure enforcement.

Section E (Identified Mortgage Market Constraints)- This section will be based on the identified constraints in the mortgage market. These constraints are divided into Macroeconomics challenges, Policy and regulatory challenges, Institutional challenges, financial sector challenges and the housing sector challenges. The practitioners will rank the challenges in each of the areas according to the order of significance.

Section F (How to improve the mortgage market) – This section is an open question. This captures the practitioners' perception on how they feel the issues in the mortgage market can be resolved.

6.30 The Choice of Methods

After an intensive review of the research question which is to understand the perception of operational inefficiencies and ineffectiveness of Banks and the mortgage market. However, four methods can be used, which are questionnaires, interviews, observation and documents. El kafrawy (2012) study argued that those methods of conducting qualitative research should give the researcher the clearer picture of things, accuracy in measurement, produce facts and evidence for the research. He emphasized five tools for selection of any appropriate method.

1. The research strategy should be associated with the proposed methods.

2. Understand each methods strengths and weaknesses.

3. Decision on the method of choice should be based on the usefulness criterion

4. A method should not be mutually exclusive; combination of methods can be used. It is because a weakness in one approach could be compensated for by strength in the other.

5. The adoption of more method enables the study to use triangulation. Various method and strategy can be used to access the research objective from different point of views to compare the results obtained.

After critically examining the various method identified above, which are questionnaire, interviews, observation and documents. Questionnaire was selected as the appropriate method suitable for this section of this research. Questionnaire is one of the widely used method in collecting survey data question because respondents replies to the same questions and large data can be collected to corroborate the quantitative analysis.

Saunders (2000, p 279) emphasized that a good questionnaire should be designed to answer the research questions. In addition, such design should be carefully constructed to ensure a fast response rate, provide reliable and valid data are collected.

A research study can use questionnaire method either for descriptive research or explanatory research. A descriptive research adopt tools will be to enable the researcher to identify and describe the variability in different circumstances. For instance, if the questionnaire is designed to access attitude, opinion and organisational practices. An explanatory or analytical research use questionnaires to examine and identify relationships between variables which is the main aim of establishing the cause and effect relationship Saunders (2000, Pp 279- 280). However, this research should explore the descriptive and explanatory designed questionnaire. This will be used to answer the research question which is to examine the perception of the practitioners on the operational issues and others relating to the development of the mortgage market.

The design of a questionnaire for this type of research should consider how it is going to be administered, the expected number of responses and the time frame. Such will guide on the type of questionnaire to adopt.

It could be self-administered, or interviewer administered method. A self-administered questionnaire is administered to the respondents and such its collected on distribution. The questionnaire could be administered electronically through email and internet (On-line questionnaires), through post and returned via same means (Postal or mail questionnaires) or it could be hand delivered and collected by same (Delivery and collected questionnaires).

Interviewer administered questionnaires on the other hand, involves the recording of the responses of the respondents during the period. It could be through the use of a telephone (telephone questionnaires). The other is called structured interviews. This is conducted where the researcher is physically present with the respondents when the questions are asked.

However, this research will use the self-administered method through Online questionnaire methods. The post or mail questionnaires may not be suitable for this research because of the high cost involved in sending them out and including self-addressed envelopes which is not within the reach of the research because this is a self-support project. In addition to the cost issue raised, Nigerian postal system is not mapped to deliver letters to respondents' houses like what is obtainable in the developed countries such as the United Kingdom. Such made that option time consuming to get responses if at all.

6.31 Justification for self-administered method

The table below show comparison/attributes of questionnaires.

Attributes	On-line	Delivery and collection	Postal	Telephone	Structured Interview
Suitability for the population sample	Low	High	High	High	Low
Response rate	High	Low	Low	High	High
Contamination/distortion of responses	Low	Moderate	Moderate	High	High
Sample size	Large	Large	Relative	Small	Small
Time Taken to collection	Short	Short	Long	Long	Long
Financial cost	Low	Low	High	High	High
Role of the interviewer/Fieldworker	None	None	None	High	High

Sources: Adopted from Saunders, 2000, p 292)

The above table justified the choice of online means. In term of cost, it is very appealing due to financial constraints of this self-supported study. Online (Email and Internet) encourage greater participation and cover wider geographical location at minimal cost. It reduced prejudice that could occur if the researcher was present. The respondents could take their time to give a valid response if needed be compared to a telephone or an interview.

However, some drawback of this are: there may be no opportunity to further investigation, responses given or further questions. No opportunity to clarify ambiguous answers. The questions may be rigid since it is structured. These problems were prevented by constructing questions that are easy to understand to prevent ambiguity.

The choice of questionnaire as a method to be used for this research was based on the following consideration:

1) This method can be used to get information from large number of respondents in different locations at almost the same time.

2) The information required are clear, easy to read and brief.

3) Standardized format of questions will make information easy to process

4) Does not require personal contact or face to face interaction with the respondents which enable a fair and accurate answers.

In summary, this section has critically examined the research methodology that will be instrumental to determination of the constraint affecting the development of the Nigeria mortgage market.

Chapter 7: Data Presentation on the Mortgage Finance Market in Nigeria.

The section is divided into two parts. The first part will present a description and statistical frequencies about the household level surveys conducted on Nigeria households from 2005 to 2017. The second part will present the empirical results using various econometrics techniques that will be instrumental to achieve the objectives of the research.

7.1 Introduction

In order to empirically investigate the associated problems of the demand for mortgage finance in the Nigerian context, a critical understanding of the dataset is key and the section will give a brief description of the household surveys, the variables identified for the studies and a brief statistical description of variables of the dataset. This will be a useful tool for a quick understanding and for simplicity.

Household Level Microdata Survey

This research study made use of five household level surveys micro dataset published from 2005 to 2017 on the Nigerian household peculiar characteristics and such behavioural attributes and pattern obtained can be used to understand the factors, determinants and limiting factors that can influence the Nigerian household with regards to their demand for housing consumption and demand for mortgage finance. These surveys are composed of microdata, which provides specific information about individual persons and households. The information is broadly on a range of population characteristics which includes fertility, nuptiality, life-course transitions, migration, labour force participation, occupational structure, education level, ethnicity and household composition. The surveys show each record of a person with all characteristics numerically coded which makes it possible to study and understand the characteristics of people in the context of their families and other co-residents, thus, making it extremely important for this study to identify the determinants of demand for mortgage finance in the context of an emerging economy like Nigeria.

Why is these Surveys Suitable for this Research?

Mortgage finance is an individual decision and the best dataset is the household level data.

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There are several reasons these surveys are suitable compared to other official census results. There are:

- **Sample error**: The surveys are microdata, not the full-count data which are prone to sample error.

- **Sample bias**: The survey sample unit is usually the household. This introduces a slight bias for studies particularly on Individuals. However, this is not the case here because the study is centred on household where common characteristics such as ethnicity, religion and birthplace are synonymous among the group.

- **Statistical Disclosure Controls:** These are measures to safeguard the privacy and confidentiality of Individuals, households and other entities in the survey. Based on this, the survey does not give the names, addresses and places of work of respondents which complied with the data protection laws globally.

- **Omission of Special Populations:** For instance, homeless, collective dwellings or another non-private household are excluded from the sample. This has reduced the biasedness of the data.

- Omission of some areas of the Nigeria due to loss of microdata, low coverage, security concerns such as political and religious unrest etc, were not covered.

- Imputation and adjustments were done to meet international standards which made international comparison very simple and easy to interpret. This is significant to this study because other surveys are not in microdata files and are mainly in annual aggregated figures which are not suitable for this research.

Drawback to the Survey/Limitations

The data of the surveys is made up of individuals and household records from the Nigerian population samples. In the context of this research, macroeconomics indicators such as inflation, price level, unemployment status, government expenditure, gross domestic products (GDP) are not captured. Business or aggregate statistics were not captured as well. In addition to the above, mortgage interest rate and level of the household indebtedness.

7.2 Nigeria Survey (Conducted by World Bank)

This section shows the breakdown of the household level data conducted by the world bank which will be used to conduct the empirical investigation in this chapter. It is worth mentioning that no same individual or Household were sampled twice.

The total sample size of the five wave surveys is made up of 426,395 Individuals and 83,956 households.

The table below show the distribution of the dataset.

Table 7.1   Distribution of the Dataset

Survey year	Frequency	Percent	Valid Percent	Cumulative Percent
2006	83700	19.6	19.6	19.6
2007	85183	20.0	20.0	39.6
2008	107425	25.2	25.2	64.8
2009	77896	18.3	18.3	83.1
2010	72191	16.9	16.9	100.0
Total	426395	100.0	100.0	

7.4   Model Specification

Equation (5) and (6) present the empirical specifications of the model with the variables being empirical proxies based on the theoretical perspective of the variables identified and in other instances used for empirical estimations in the previous studies. There are:

Demand for Housing Model

Theoretical Model

$$House\ Size = F(PERSONS, URBAN, GEOGRAPHICAL\ DIFFERENCES,$$

$$ELECTRIC, WATSUP, COOKFUEL, PARRULE,$$

$$POLYMAL, AGE, SEX, MARST, CHILD, CHILD\_5, UNREL, LIT,$$

$$YRSCHOOL, EDUCNG, EMPSTAT, INDGEN, INCOME) \qquad 5$$

Empirical Model

$$Rooms = \alpha + \beta_1 persons + \beta_2 urban + \beta_3 GeographicD + \beta_4 electric + \beta_5 watsup +$$
$$\beta_6 Phone + \beta_7 fam + \beta_8 polymal + \beta_9 age + \beta_{10} sex + \beta_{11} marst + \beta_{12} child + \beta_{13} child\_5 +$$
$$\beta_{14} rel + \beta_{15} lit + \beta_{16} yrschool + \beta_{17} educng + \beta_{18} indgen + \beta_{19} Income + \varepsilon$$

Demand for Mortgage Finance Model

$$MD = F(PERSONS, URBAN, GEOGRAPHICAL\ DIFFERENCES,$$

$$, ELECTRIC, WATSUP, ROOMS, FAM,$$

$$PARRULE, POLYMAL, AGE, SEX, MARST, CHILD, CHILD\_5, UNREL, LIT,$$

$$YRSCHOOL, EDUCNG, INDGEN, INCOME) \qquad\qquad 6$$

$$Ownership = \alpha + \beta_1 rooms + \beta_2 persons + \beta_3 urban + \beta_4 Geographical\ dd + \beta_5 electric$$
$$+ \beta_6 watsup + \beta_7 Phone + \beta_8 fam + \beta_9 parrule + \beta_{10} polymal + \beta_{11} age$$
$$+ \beta_{12} sex + \beta_{13} marst + \beta_{14} child + \beta_{15} child\_5 + \beta_{16} lit + \beta_{17} yrschool$$
$$+ \beta_{18} educng + \beta_{19} indgen + \beta_{20} Income + \varepsilon$$

Table 7.27   Variable Names and Coding

Dependent Variables	Description	Detailed Table in Appendix 1 (Page 381-398
Room	Number of rooms	See Table 7.12
Ownership	Owned property =1, Otherwise = 0	See Table 7.5
Independent Variables		
Persons	Number of persons recorded in the Household	See Table 7.2
Unrelated	Number of unrelated persons in the Household	See Table 7.3
Urban	Urban =1 otherwise = 0	See Table 7.4
Geographical Differences	Rich States =1, otherwise = 0	See Table 7.6 The following States were classified as rich states by their contribution to GDP: Lagos, River, Delta, Oyo, Imo, Kano, Edo, Akwa-Ibom, Ogun, Kaduna, Cross-river, Abia, Ondo, Osun, Benue, Anambra, Katsina, Niger, Borno and Plateau.
Electricity	Yes =1, Otherwise = 0	See Table 7.9
Water Supply	Yes =1, Otherwise = 0	See Table 7.10
Phone	Yes =1, Otherwise = 0	See Table 7.11
Parrule	Link to parent of person in Household = 1, otherwise = 0	See Table 7 .13
Polymal (Man with more than one wife linked)	More than more wife linked = 1, Otherwise = 0	See Table 7.14
FAMSIZE (Family Size)	Number of own family member in the Household	See Table 7.15
Children	Number of Children	See Table 7.19
Children under five	Number of Children under five	See Table 7.20
Sex	Male = 1, Otherwise = 0	See Table 7.16
Marital Status	Married/In Union =1, Otherwise = 0	See Table 7.17
Age	Age of Individuals in the Household	See Table 7.18
Literacy	Yes, literate = 1, Otherwise = 0	See Table 7.21
Years of Schooling	Number of years of schooling	See Table 7.22
Educational Attainment	• None =0 • Low Education (Primary) = 1 • Average Education (Secondary) = 2 • Higher Education (University)=3 • Postgraduate Education (Postgraduate) = 4	See Table 7.23 **Note:** • **Primary School Education- Nursery to Primary School Year 6** • **Secondary School Education- Junior Secondary School to A-Levels** • **University Education –HND/BSc** • **Postgraduate Education- MSc/PhD.**
Industry	Agricultural, fishing and forestry = 1, otherwise = 0	See Table 7.24
Income	Annual Income	See Table 7.25
Employment Status	Employment =1, otherwise = 0	See Table 7.26

 Note: Detailed description of the dataset and tables are in Appendix 1

This next section will examine the econometric specification of the model.

7.5   Empirical Results and Interpretations

This section will present and interpret the results of econometric modelling of the research

questions in this study.

Research Question One

In order to effectively answer this question, this research adopted the econometric modelling

from general-to-specific approach and the following results were obtained.

Table 7.28 **Simultaneous Regression Equation Explaining the Demand for Housing Using Five Combined Household Level surveys.**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	2.37 (48.55)	2.14 (61.60)	1.33 (103.25)	1.62 (132.86)	1.41 (112.18)	1.41 (112.31)
Persons	-0.10 (-5.80)*		-0.05 (-7.32)*			
Unrelated	0.06 (26.15)*	0.05 (28.00)*	0.04 (27.52)*		0.04 (29.60)*	0.04 (29.61)*
Urban	-0.13 (-83.03)*	-0.20 (-127.10) *		-0.13 (-83.42)*	-0.20 (-126.80)*	-0.20 (-127.15)*
Geographical Differences	0.07 (7.50)*	0.10 (10.00)*	-0.003 (-1.85)	0.08 (9.41)*	0.10 (10.30)*	0.01 (5.13)*
Electricity	0.10 (58.51)*	0.15 (91.17)*	0.10 (58.44)*	0.10 (61.70)*	0.15 (91.50)*	0.15 (91.83)*
Water Supply	0.001 (0.54)	0.01 (5.82)*	-0.02 (-15.00)*	0.001 (1.00)	0.01 (5.50)*	0.01 (5.52)*
Phone	-0.30 (-181.20)*			-0.25 (-177.01)*		
Parrule	-0.05 (-5.80)*	-0.08 (-9.50)*		-0.10 (-7.70)*	-0.10 (-9.60)*	
Polymal	0.02 (13.30)*	0.02 (11.04)*	0.003 (1.80)	0.005 (3.81)*	0.004 (2.98)**	0.004 (3.00)*
Family Size	0.42 (34.50)*	0.34 (228.26)*	0.40 (53.70)*	0.33 (232.12)*	0.33 (222.40)*	0.33 (222.20)*
No of Children	-0.01 (-4.70)*	-0.07 (-48.91)*				
No of Children Under five	-0.10 (-40.67)*					
Age	0.10 (29.77)*	0.05 (27.53)*	0.05 (22.02)*	0.04 (27.50)*	0.04 (25.75)*	0.04 (25.87)*
Sex	-0.01 (-8.02)*	-0.01 (-7.64)*	-0.005 (-3.10)*	-0.01 (-4.10)*	-0.01 (-3.81)*	-0.01 (-3.91)*
Marital Status	0.04 (20.74)*	0.05 (32.50)*	0.05 (31.21)*	0.02 (14.17)*	0.05 (31.92)*	0.04 (31.42)*
Literacy	0.01 (6.07)*		0.005 (2.40)**		0.008 (4.54)*	0.01 (4.60)*
Educational Attainment	0.04 (23.04)*	-0.02 (-6.40)*	0.01 (5.15)*	0.05 (34.60)*	0.03 (13.64)*	0.03 (13.71)*
Years of Schooling	0.03 (18.71)*		0.02 (15.82)*		0.02 (16.70)*	0.03 (16.70)*
Industry	0.04 (18.23)*	0.05 (21.60)*	0.10 (34.31)*	0.04 (18.15)*	0.04 (20.45)*	0.04 (20.43)*
Log Total Income	0.50 (12.00)*	0.02 (5.71)*	0.10 (16.00)*	0.10 (13.55)*	0.04 (14.64)*	0.06 (15.00)*
R-SQAURED	0.22	0.20	0.12	0.21	0.15	0.15
S.E	2.20	2.27	2.33	2.20	2.28	2.28
F Statistics	4710.95	4332.36	3344.13	6907.24	4178.71	4418.17
P Value	0.000	0.000	0.000	0.000	0.000	0.000

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** *P* value ≤ 0.001; * *P* value ≤ 0.05)

Table 7.29 Simultaneous Logistic Regression Equation Explaining the Demand for Mortgage Finance Using Five Combined Household Level surveys

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-0.24 (-4.05)	0.40 (28.25)	0.30 (23.15)	-0.04 (1.35)	-0.74 (57.00)	-0.27 (7.42)
Persons	-0.11 (-10.09)*					
Unrelated	0.02 (0.40)	0.09 (3.80)*	0.09 (3.84)*	-0.02 (0.60)	-0.18 (7.04)*	0.03 (0.83)
Urban	-0.87 (-96.55)*	-1.30 (142.78)*	-1.30 (-143.11)*	-0.90 (98.56)*	-1.12 (124.00)*	-1.01 (112.78)*
Geographical Differences	-0.60 (-12.94)*	-0.5 (11.56)*	-0.50 (-11.75)*	-0.55 (12.81)*	-0.67 (-15.12)*	-0.56 (-12.78)*
Electricity	-0.30 (-29.12)*	0.16 (20.00)*	0.16 (19.75)*	-0.28 (-31.22)*		-0.14 (-15.45)*
Water Supply	-0.15 (-11.46)*	-0.06 (5.42)*	-0.06 (5.42)*		-0.17 (12.85)*	-0.11 (-8.70)*
Phone	-1.40 (107.54)*			-1.40 (106.85)*		
Rooms	0.32 (160.00)*			0.32 (161.00)*	0.40 (195.50)*	0.40 (201.50)*
Parrule	0.33 (7.65)*	0.25 (6.02)*	0.26 (6.22)*	0.31 (7.28)*	0.40 (8.14)*	0.30 (6.93)*
Polymal	0.10 (3.48)*	0.10 (3.48)*	0.05 (1.96)	0.05 (1.68)	0.09 (3.52)*	0.03 (1.15)
Family Size	0.20 (15.28)*	0.10 (103.00)*	0.10 (105.00)*	0.05 (52.00)*	0.03 (33.00)*	0.03 (29.00)*
No of Children	-0.02 (-7.00)*					
No of Children Under five	-0.01 (-1.00)					
Age	0.004 (100.00)*		0.002 (20.00)*	0.001 (20.00)*	0.001 (20.00)*	0.002 (20.00)*
Sex	-0.01 (-0.75)	-0.01 (0.86)	-0.001 (-0.15)	-0.02 (1.88)	-0.03 (4.28)*	0.002 (0.25)
Marital Status	0.20 (14.64)*	0.80 (96.90)*	0.80 (96.25)*	0.18 (15.45)*	0.20 (17.00)*	0.20 (17.45)*
Literacy	-0.08 (-8.50)*	-0.03 (-3.90)*	-0.03 (-4.00)*			-0.10 (-8.70)*
Educational Attainment	-0.15 (-25.50)*	-0.20 (32.80)*	-0.17 (34.00)*	-0.17 (34.60)*		-0.20 (-30.34)*
Years of Schooling	0.003 (7.50)*	0.005 (10.00)*	0.005 (5.00)*	0.002 (10.00)*	-0.003 (-30.00)*	0.003 (30.00)*
Industry	0.24 (18.77)*	0.33 (25.50)*	0.32 (24.80)*	0.28 (21.23)*	0.40 (29.78)*	0.26 (19.84)*
Log Total Income	0.06 (29.00)*	0.06 (31.00)*	0.06 (30.00)*	0.03 (29.00)*	0.06 (28.00)*	0.06 (29.00)*
-2 Log likelihood	434628.09	490725.50	490513.15	435291.91	448982.83	446511.30
Cox & Snell R Square	0.23	0.13	0.12	0.23	0.21	0.21
Nagelkerke R Square	0.32	0.17	0.17	0.32	0.29	0.29

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** *P* value ≤ 0.001; * *P* value ≤ 0.05)

Model Analysis Discussion

The two tables (7.28 and 7.29) above presented the results from the demand for housing and demand for mortgage finance. In each of the two tables, six different models were used. This is aimed to determine robust models which will be used to answer the research questions.

Model 1

From the demand for housing model, it revealed that the persons variable influences the family size variable. In addition to this, Urban variable has a negative coefficient is impact on the Phone variable. Furthermore, Water supply variable in the model also influence the phone variable. In the model, the variable mentioned tends to capture the same impact in term of its contribution to the demand for housing. The same impact was experienced in the demand for mortgage finance model 1.

Model 2

Based on the model 1, the following variables were removed phone, Literacy, Years of schooling from the demand for housing. The correlation of the literacy and years of schooling were examined. The results of the model 2 revealed there is slight fall in the coefficient of family size but highly statistically significant. In addition, the removal of literacy and years of schooling made the coefficient of educational attainment to be negative and statistically significant. This evidenced that inclusion of the literacy and years of schooling contribute to the impact of educational attainment and the demand for housing (more rooms). This removal of the literacy and years of schooling reduced the contribution of the log of total income in the model. Also, the R-squared fall slightly. This captures the percentage of the dependent variable that is explained by independent variable. This means that it is difficult to predict household behaviour.

The removal of persons, phone and age from demand for mortgage finance model had two effect on the model. Firstly, the coefficient of family size reduced by 50%, however, it was highly statistically significant when persons was removed. Secondly, the coefficient of Urban increased in 35% and water supply reduced but statistically significant. However, the removal of these variables impacted on the model R-squared which reduced by 10%.

Model 3

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In the demand for housing model, the inclusion of persons variable, increased the contribution of the family size in the model. In addition, the inclusion of literacy variable in the model has change the contribution power of education from negative to positive. However, the removal of Urban, parrule, phone variables in the model reduced the R-squared by 8%. As a consequent, the coefficient of the water supply changed to negative.

The inclusion of Age variable in the demand for mortgage finance model and the removal of persons, phone and rooms did not make any significant difference in term of their contribution to the ability of household demand for mortgage finance.

Model 4

The demand for housing model used here excluded the persons, unrelated persons, literacy and years of schooling. Based on the above, the exclusion of persons and unrelated persons did reduce the contribution of family size but it is highly statistically significant. The coefficient of educational attainment increased significantly with the exclusion of literacy and years of schooling.

The demand for mortgage model excluded persons, water supply and literacy. The results revealed that the coefficient of family size reduced 50% but statistically significant. The coefficient of Urban reduced by 45% due the exclusion of water supply. This implies that properties without water supply in urban centres will reduce the demand for mortgage finance. The removal of literacy variable reduced the contributory power of the educational attainment and the log of total Income.

Model 5

In the demand for housing model, unrelated person was returned into the model and family size coefficient was not affected. Furthermore, literacy variable was included, and the contribution of educational attainment and years of schooling increased slightly. However, the R-Squared reduced slightly.

The demand for mortgage finance model shows significant improvement with the exclusion of persons, literacy and education attainment. The coefficient of family size reduced slightly but it is statistically significant. Furthermore, the exclusion of literacy and educational attainment, the coefficient of years of schooling becomes negative and it is statistically

significant.

Model 6

Based on the findings from the previous models, the demand for housing model excluded the following variables, which are: persons, phone, purrule. The exclusion of purrule (Wealth) variable increased the contribution of log total Income to the demand for housing by 50%. This evidenced it that households with intergenerational wealth transfer will influence their demand for housing. In addition, the positive contribution of educational attainment, literacy and years of schooling improves should increase household income in Nigeria. (All things being equal).

The demand for mortgage finance model here, bridges on the previous models. In this model, the following variables were included, which are: electricity, literacy and educational attainment. The electricity variable contributes to water supply coefficient in the model. Furthermore, the literacy and educational attainment complements the years of schooling which changed it into positive coefficient.

Based on the six different models that I have applied above, the most suitable model to answer to the first research is model six. The reason for this, is that it has built on the weakness of the previous models that was used and, on this ground, using a general to specific modelling techniques, model six for both demand for housing and demand for mortgage finance was adopted.

7.6   Critical Discussion on the Model (Model Six)

The discussion here focussed on the findings of this research to determine the factors that could influence the demand for housing and demand for mortgage finance in Nigeria.

The findings of this research revealed that the family size is positive and highly statistically significant as expected. The family size is made up of the number of children and the household head and the partners. This is grounded on the theoretical perspective that the larger the family size, the more the number of rooms that will be required to accommodate the household, when all other things are equal. Based on the findings, the family size is an important factor that can influence both the demand for housing and therefore demand for mortgage finance in Nigeria. Hutchison et al (2014), Meen and Andrew (2005) and Leece (2006) studies evidenced this research finding.

In addition to the above, is the number of unrelated persons living within the household. This was considered in the research, because it is a cultural practice to have unrelated persons living in the household. As the households have more of the people, the more the number of rooms required to accommodate them. The coefficient of unrelated persons is positive and highly statistically significant as expected. This research has evidenced it that the number of the unrelated persons in the household can influence the demand for housing and consequently, the demand for mortgage finance.

Furthermore, another variable "Polymal" which consider a man with more than one wife was considered. This research expects the impact of this variable to be like family size and unrelated person variable above. This is because, the family size should increase as the number of wives increases, and therefore, the number of rooms required should increase. Also, from another perspective, a polygamous household should have a better credit risk because they can pull resources together and be in suitable position to get a mortgage. The results revealed a positive and statistically significant coefficient. This evidenced it that a household with more than one wife/partner can influence the demand for more rooms and consequently, demand for mortgage finance.

The coefficient of urban in this model capture the impact of location of the household whether urban or rural location. The coefficient of Urban revealed a negative coefficient and its statistically significant. This indicate that household demand lesser number of rooms in the urban centres compared to the rural area. This result does confirm that most household resides in the rural areas because of the cheap cost of living compared to living in the urban centres. In addition to this, households in urban centres demand less of mortgage and may result to renting rather than buying due to expensive properties in the urban. This finding is confirmed in Gibb et al (2018) studies which emphasized that aggregate population dynamics, advances in technology and effects of internal and external shocks have affected the urban centres housing demand.

The impact of geographical difference was investigated. The coefficient of this variable is positive and statistically significant which implies that demand for housing is more influenced by the geographical difference in Nigeria. This research can infer that in the different states in Nigeria, demand for housing will be more in economically buoyant states like Lagos, Abuja, Cross Rivers and Kano etc. compared to others and consequently, the households in states

that are economically buoyant should demand more mortgage finance compared to poor states. Further research will be done on this later in this research. This finding was evidenced in Meen and Andrew (2005) which emphasized that economic circumstances does influence households to move to Urban centres and thus the demand for housing.

This research considered the role of infrastructural availability on the demand for housing. Due to the underdevelopment of infrastructures in Nigeria, these could be considered as important determinants. This research focussed on electricity and water supply.

The coefficient of electricity variable is positive and highly statistically significant. This result evidenced it that the availability of adequate electricity supply will influence the demand for housing in Nigeria. However, in terms of buying a property, the coefficient of electricity is negative and highly statistically significant. This evidenced it in the Nigeria context, electricity availability is less likely a factor to consider when making a decision to buy their desired property.

The coefficient of water supply is positive and statistically significant. Due to the unavailability of water supply in Nigeria, the households will desire a residence with water supply. The availability of water supply will increase the demand for housing. However, in terms of demand for mortgage finance, water supply is less likely to influence the household decision to buy their desired property. The studies of Doling et al (2013) and Brueckner et al (1999) evidenced the above findings on how the infrastructural development and amenities can influence the demand for housing.

The level of demand for housing increases as the household advances in age. The coefficient of the Age as a factor to influence the demand for housing is positive and highly statistically significant. This is in line with the theoretical perspective of the life cycle hypothesis which stipulates that as the individual advance in age, demand will increase at the early stage and pay the mortgage through their working lifetime and paid off before retirement. This is consistent with Follarin and Dunsky (1997), Ling and McGill (1998) findings. Likewise, as the household advance in age and apart from their training and apprenticeship, they should be able to access mortgage finance.

The coefficient of the marital status is positive and highly statistically significant. Based on this result, it is evidenced that the marital status of occupants is associated with the demand for

housing size and thus its housing decisions. Households can pull resources together and based on better resources at their disposal, this can enhance their chance of accessing mortgage finance to buy their desired property. Leece (2006), Meen and Andrew (2005), Ling and McGill (1998), Follarin and Dunsky (1997) studies confirmed this finding.

The coefficient of purrule which capture the intergenerational transfer is positive and highly statistically significant. This evidenced that households that have wealth pass to them can influence their demand for housing and consequently, demand for mortgage finance. The studies of Dupuis (2012), Jones (1994, 1995) Cho et al (1995) studies emphasized the impact of intergenerational transfer on the demand for housing and mortgage finance.

It has been established that education have a positive relationship with housing consumption. Since the ability to read and write is a measure of knowledge, the level of literary was considered. The coefficient of the impact of Literary on the household housing decision is positive and statistically significant. This evidenced that the level of Literary does influence their household decision choice in Nigeria. However, based on the result from the research, it is evidenced that it is less likely if the household will consider buying their desired property through mortgage finance.

Furthermore, the Years of School was considered. This is based on the argument that the more years used to acquire knowledge and skillset, should increase their ability to earn more income from their economic activities. The coefficient is positive and statistically significant. In the Nigeria context, the years of school is really a significant factor that can influence the demand for housing. However, the years of schooling only is less likely to influence the household decision to use mortgage finance to buy their desired property.

The educational attainment (Academic qualifications obtained) was used to corroborate literacy and years of school variables above. The coefficient of the educational attainment is positive and statistically significant which implies that educated household with academic qualifications have the capacity to increase their demand for housing and consequently obtain mortgages to finance the purchase of their properties. The findings are evidenced in the studies of Meen and Andrew (2005), Ling and McGill (1997).

The industrial sector where the Individuals in the household works will have a significant impact on the ability to demand for housing. The coefficient of the industrial sector is positive

and statistically significant. This implies that industry where the household works have significant impact on the ability of the household to buy their desired properties.

The household Income level show the total earnings from all sources. This variable was adjusted with inflation. The coefficient of the variable is positive and highly statistically significant. This implies that household with enough income should impact on the household to make housing decisions and consequently, thus, can demand for mortgage finance. However, this research is of the opinion that due to low income in Nigeria and general high unemployment level across the economy in the formal sector where individuals are paid on monthly basis, the mortgage market is underdeveloped.

In summary, based on the research findings in this studies, it can be evidenced that demand for housing in Nigeria is influenced by Household total Income, Industry where the household works, geographical location, family size, infrastructural facilities, age, marital status, level of education attainment and intergenerational wealth transfer.

In addition, the determining factors for the demand for mortgage finance in the Nigerian context is influenced mainly by Household Total Income, Industry where the household works, geographical location, family size, infrastructural facilities, number of rooms, marital status, age, years of schooling and intergenerational wealth transfer.

7.7 Test of Hypothesis

The next phase in this research is to conduct a test of hypotheses for the model empirically discussed above with the aim of testing the validity and further investigate the significance of the model.

Hypothesis testing in this instant should give this research inferences about the population parameters using the sample from the datasets. In order to carry out the test of hypothesis, the following steps will be carried out.

Also, the coefficients of the variables were adopted from Table 7.28.

- Formulate the null hypothesis and the alternative hypothesis
- Build a statistic to test the hypothesis made
- Define a decision rule to reject or not the null hypothesis.

The first statement of hypothesis to be tested is:

7.7.1 <u>Is household Income a contributory determinant of the demand for mortgage finance?</u>

Step 1 : The null hypothesis and alternative hypothesis are the following.

$$H_0: B_1 = 0$$

Based on the null hypothesis, this research postulates that Household Income as a contributory determinant to the household demand for mortgage finance is zero.
$$H_1: B_1 \neq 0$$

However, the alternative hypothesis here is that household Income as a contributory determinant to the household demand for mortgage finance is not zero.

Step 2: The test statistic is:

$$t = \frac{B_1 - B_0}{SE\ (B_1)} = \frac{B_1 - 0}{SE\ (B_1)} = \frac{0.058}{0.002} = 29$$

Step 3: Decision rule

It is useful to use several significance levels to determine the statistically significance of the statement. This research will consider 90%, 95% and 99% level of significance. The critical values for each level of significance is stated in the table below.

Level of Significance	T Critical Value
90%	1.645
95%	1.960
99%	2.576

The decision rule is

$$\text{If } t_{B1} \geq t_{n-k}^{\frac{\alpha}{2}}, \text{then reject } H_0$$

$$\text{If } t_{B1} \leq t_{n-k}^{\frac{\alpha}{2}}, \text{then not reject } H_0$$

Where t_{B_1} is the T-statistics estimated and $t_{n-k}^{\frac{\alpha}{2}}$ is the T critical value.

Based on the above, $t_{B_1} = (29)$ is greater than (1.645) @ 90%, (1.960) @ 95% and (2.576) @ 99%. Since the T value is relatively high, the position of the research is to reject H_O at 90%, 95% and 99% level of significance. We can conclude based on this evidence that household Income is a contributory determinant to the household demand for mortgage finance.

The second statement postulated is:

7.7.2 Does Family size in Nigeria influence the household decision to demand for mortgage finance?

This research postulates that the family size in Nigeria should influence the household decision to demand for mortgage finance. In order to validate this statement, this research states the following hypothesis.

Step 1 : The null hypothesis and alternative hypothesis are the following.

$$H_0: B_1 = 0$$

Based on the null hypothesis, this research postulates that family size as an influence on the household decision to demand for mortgage finance is zero.

$$H_1: B_1 \neq 0$$

However, the alternative hypothesis states that family size as an influence on the household decision to demand for mortgage finance is not zero.

Step 2: The test statistic is:

$$t = \frac{B_1 - B_0}{SE\ (B_1)} = \frac{B_1 - 0}{SE\ (B_1)} = \frac{0.029}{0.001} = 29$$

Step 3: Decision rule

It is useful to use several significance levels to determine the statistically significance of the statement. This research will consider 90%, 95% and 99% level of significance.

The decision rule is

$$\text{If } t_{B1} \geq t_{n-k}^{\frac{\alpha}{2}}, \text{then reject } H_0$$

$$\text{If } t_{B1} \leq t_{n-k}^{\frac{\alpha}{2}}, \text{then not reject } H_0$$

Where t_{B_1} is the T-statistics estimated and $t_{n-k}^{\frac{\alpha}{2}}$ is the T critical value..

Based on the above, t_{B_1} = (29) is greater than = (1.645) @ 90%, (1.960) @ 95% and (2.576) @ 99%. Since the T value is relatively high, the position of the research is to reject H_O at 90%, 95% and 99% level of significance. We can conclude based on this evidence that family size in Nigeria does influence their decisions to demand for mortgage finance.

The third statement postulated in this research is:

7.7.3 Does the educational qualification attained enhance the affordability index of the household to demand for mortgage finance?

The educational qualifications of the household should provide the households a means to a better financial position which could enhance their ability to demand for mortgage finance. In order to test the validity of this statement in the Nigeria context, the hypotheses are stated as follows.

Step 1: The null hypothesis and alternative hypothesis are the following.

$$H_0: B_1 = 0$$

Based on the null hypothesis, this research postulates that the educational qualification attained enhances the affordability index of the household to demand for mortgage finance is zero.

$$H_1: B_1 \neq 0$$

However, the alternative hypothesis states that the educational qualification attained enhances the affordability index of the household to demand for mortgage finance is not zero.

Step 2: The test statistic is:

$$t = \frac{B_1 - B_0}{SE\ (B_1)} = \frac{B_1 - 0}{SE\ (B_1)} = \frac{0.182}{0.006} = 30.34$$

Step 3: Decision rule

It is useful to use several significance levels to determine the statistically significance of the statement. This research will consider 90%, 95% and 99% level of significance.

The decision rule is

$$If\ t_{B1} \geq t_{n-k}^{\frac{\alpha}{2}}, then\ reject\ H_0$$

$$If\ t_{B1} \leq t_{n-k}^{\frac{\alpha}{2}}, then\ not\ reject\ H_0$$

Where t_{B_1} is the T-statistics estimated and $t_{n-k}^{\frac{\alpha}{2}}$ is the T critical value.

Based on the above, t_{B_1} = (30.34) is greater than = (1.645) @ 90%, (1.960) @ 95% and (2.576) @ 99%. Since the T value is relatively high, the position of the research is to reject H_O at 90%, 95% and 99% level of significance. We can conclude based on this evidence that educational qualification attained enhance the affordability index of the household to demand for mortgage finance.

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The fourth statement postulated in this research is:

7.7.4   Is the level of Mortgage debt financing related with age?

There is a direct relationship between the amount of the mortgage financing and the household age. This research postulates that as the household head advances in age, the better the chance to get a mortgage. In order to test that validity of this statement, a test of hypothesis will be conducted.

Step 1: The null hypothesis and alternative hypothesis are the following.

$$H_0: B_1 = 0$$

Based on the null hypothesis, this research postulates that the household demand for mortgage debt is related with age is zero.

$$H_1: B_1 \neq 0$$

However, the alternative hypothesis states that the household demand for mortgage debt is related with age is not zero.

Step 2: The test statistic is:

$$t = \frac{B_1 - B_0}{SE\ (B_1)} = \frac{B_1 - 0}{SE\ (B_1)} = \frac{0.002}{0.0001} = 20$$

Step 3: Decision rule

It is useful to use several significance levels to determine the statistically significance of the statement. This research will consider 90%, 95% and 99% level of significance.

The decision rule is

$$If\ t_{B1} \geq t_{n-k}^{\frac{\alpha}{2}}, then\ reject\ H_0$$

$$If\ t_{B1} \leq t_{n-k}^{\frac{\alpha}{2}}, then\ not\ reject\ H_0$$

Where t_{B_1} is the T-statistics estimated and $t_{n-k}^{\frac{\alpha}{2}}$ is the T critical value.

Based on the above, t_{B_1} =(20) is greater than = (1.645) @ 90%, (1.960) @ 95% and (2.576) @ 99%. Since the T value is relatively high, the position of the research is to reject H_O at 90%, 95% and 99% level of significance. We can conclude based on this evidence that household demand for mortgage debt is related with age. This conforms with the life cycle hypothesis.

The fifth statement postulated in this research is:

7.7.5   Is being married essential to demand for mortgage finance in Nigeria?

This research postulates that married couples have a better chance of getting a mortgage because the financial capacity of two wage earners is better than a single individual. This is because they can pull resources together. This research will test the validity of the statement that being married is essential to demand for mortgage finance in Nigeria as follows.

Step 1: The null hypothesis and alternative hypothesis are the following.

$$H_0: B_1 = 0$$

Based on the null hypothesis, this research postulates that being married is essential to demand for mortgage finance is Nigeria is zero.

$$H_1: B_1 \neq 0$$

However, the alternative hypothesis states that being married is essential to demand for mortgage finance is Nigeria is not zero.

Step 2: The test statistic is:

$$t = \frac{B_1 - B_0}{SE\ (B_1)} = \frac{B_1 - 0}{SE\ (B_1)} = \frac{0.192}{0.011} = 17.45$$

Step 3: Decision rule

It is useful to use several significance levels to determine the statistically significance of the statement. This research will consider 90%, 95% and 99% level of significance.

The decision rule is

$$If\ t_{B1} \geq t_{n-k}^{\frac{\alpha}{2}},\ then\ reject\ H_0$$

$$If\ t_{B1} \leq t_{n-k}^{\frac{\alpha}{2}},\ then\ not\ reject\ H_0$$

Where t_{B_1} is the T-statistics estimated and $t_{n-k}^{\frac{\alpha}{2}}$ is the T critical value.

Based on the above, t_{B_1} =(17.45) is greater than (1.645) @ 90%, (1.960) @ 95% and (2.576) @ 99%. Since the T value is relatively high, the position of the research is to reject H_0 at 90%, 95% and 99% level of significance and accept H_1. This research can conclude that the martial statue of the household can influence that demand for mortgage finance is Nigeria.

In summary, we can conclude based on the evidence that household income, family size, educational qualifications, age and marital status are statistically significant determinants and contributory factors that could influence the demand for mortgage finance in Nigeria.

7.8   MODEL SIGNIFICANCE

Building on the above, having tested the statistically significance of the five variables in the model. The question is what happens to the other variables in the model. The next step is to test for the significance of the demand for mortgage finance model to determine the overall significance of the model. Model significance means global significance of the model. To test

the global significance of a model, F statistic was used.

In order to carry out this test of hypothesis, the following steps will be carried out.

- Formulate the null hypothesis and the alternative hypothesis

- Build a statistic to test the hypothesis made

- Define a decision rule to reject or not the null hypothesis.

Step 1

To determine whether the model is globally significant, the null hypothesis H_0 will be stated as follows.

$$H_0 : B_2 = B_3 = \cdots = B_K = 0$$

In the null hypothesis above, it means that the explanatory variables don't explain the factors/determinants/limiting factors that influence the demand for mortgage finance in Nigeria.

$$H_1 : H_0 \text{ is not true}$$

The alternative hypothesis is refuting this claim that the explanatory variables in the model does explain the factors/determinants/limiting factors that influence the demand for mortgage finance in Nigeria.

The test the validity of the R-squared form of *F* statistic was used.

Step 2

F statistic (R-squared form):

$$F = \frac{R^2\,(k-1)}{(1-R^2)/(n-k)} = \frac{0.21/17}{\frac{1-0.21}{(426395-17)}} = 666{,}711.70$$

Where R^2 is R-squared, k is number of variables used and n is the number of observations used in the model.

Step 3

This critically examine the result of the estimate and compare it with the table value to determine the decision whether to reject or not to reject the null hypothesis.

The decision rule is

$$\text{If } F \geq F^\alpha_{q,\ n-k} \quad \text{reject } H_0$$

$$\text{If } F < F^\alpha_{q,\ n-k} \quad \text{not reject } H_0$$

Where $F^\alpha_{q,\ n-k}$ is the F distribution from the statistical table and the critical value $F^\alpha_{q,\ n-k}$

depends on α (the level of significance), q is the degree of freedom of the numerator and $(n - k)$ is the degree of freedom of the denominator.

Based on the decision rule, the null hypothesis (H_0) should be reject in favour alternative hypothesis (H_1) at α (the level of significance) when $F \geq F^{\alpha}_{q,\ n-k}$. Then when the null hypothesis (H_0) is rejected, the research can conclude that $B_2 = B_3 = \cdots = B_K$ are jointly statistically significant at the selected significance level.

From the results in step 2, the estimated F is 666711.40 and $F^{\alpha}_{q,\ n-k}$ = 1 at 90%, 95% and 99% level of significance and since F (666711.40) $\geq$ $F^{\alpha}_{q,\ n-k}$ (1), we can conclude by rejecting(H_0) in favour of (H_1) and conclude that the model is statistically significance at 90%, 95% and 99% level of significance.

7.9 Research Question Two (Identify the regional prevalence factors, characteristics and determinants of the housing market).

The second research question in this thesis examined and identified the regional prevalence factors, characteristics and determinants of the Nigeria housing market. This is due to the multi-cultural and diverse ethnic community which can influence their consumption pattern. In addition, this research will investigate if the level of infrastructural development, family size, marital status, geographical differences, level of educational attainment, Industry and level of Income can influence the demand for mortgage finance.

To answer the above question critically, two approach were adopted. The first approach examined the North versus South divide and the second approach investigated and focussed on the six geopolitical zones to identify the regional difference in the Nigeria context and identified the prevalence factors, characteristics and determinant along the regions.

Nigeria is polarised along the north-south divide and this research investigated the impact of this polarization on the demand for housing and mortgage finance. The following will give a brief background to the contextual information to this section of this research.

Brief background Information

Pictorial View of North-South Divide

Note: The Blue coloured areas are northern part of Nigeria and the white coloured areas are southern part of Nigeria.

7.10 A brief description of the Northern vs Southern Part of Nigeria Divide

Economy: The northern Nigeria economic activities is centred on the groundnut and cotton Industries for its main revenue generation. In addition, tin mining, steel mining and other metal industries are the prominent mining activities in this part of Nigeria. Cement Industries and leather processing industries are very developed. This constitute the economy activities in the north and its serves as

employment generation. The dataset of industrial activities revealed that agriculture, fishing and forestry activities made up 22.3% of the activities while the other sectors are 77.7%. This evidenced it that agricultural activities is the primary occupation in the northern part of Nigeria.

The Southern part of Nigeria economic activities is centred on the Oil and gas Industry, manufacturing, agricultural products such cocoa, cashew etc for its main revenue generation. It is the tourism hub of Nigeria and it is the financial centre of Nigeria. It is linked to the coastal line of the south. Due to this, many economic activities are engaged in coastal ports in southern part of Nigeria. The nine coastal ports in southern part of Nigeria contribute significantly to the federation accounts. This constitute the economy activities in the southern part of Nigeria and its serves as employment generation.

The dataset of industrial activities revealed that agriculture, fishing and forestry activities made up 19.1% of the activities while the other sectors are 80.9%. This evidenced that agricultural activities are the primary occupation in the southern part of Nigeria, and they are mainly into subsistence farming.

Table 7. 32 Industry

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Agriculture, Fishing and Forestry	60187	22.3	126922	80.9
Other Sector	209278	77.7	30003	19.1
Total	269465	100.0	156925	100.0

GDP Contribution: The GDP contribution of the twenty states of the Northern part of the Nigeria is 33% and currently improving but a lot is still needed to be done to increase its contribution. These includes the aggressive search for Oil deposit and other mineral deposits. The contribution of the northern Nigeria to the Nigeria's national income was just 2.5% (NBS 2017).

The GDP contribution of the sixteen states of the Southern part of Nigeria is 67% and national income contribution is 93% (NBS 2017). The economic prosperity of the southern part of Nigeria should influence the development of the housing and mortgage market. This implies that households in the southern part of Nigeria should demand more mortgage finance compared to those in the northern part of Nigeria

Geographical Difference: The dataset of the Northern Nigeria revealed that 80% of the location are in rural area and 20% are in the urban areas. The impact of this on the demand for housing and mortgage finance is that, household will demand more rooms (housing) and consequently demand for mortgage finance when the family size increase. This is due to relatively cheaper houses in rural north areas and access to the government assistance schemes specifically to the northern part of Nigeria.

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The southern part of Nigeria dataset revealed that 34.1% of the households live in the urban centres. This means that there are more households in the southern part of Nigeria, which demand for housing, and consequently, will demand for mortgage finance. Households move to the urban centres due to the economic prosperity available there and these are prominent in Lagos, Ibadan, Oyo, Osogbo, Akure, Port Harcourt, Calabar, Asaba etc. This show a significant difference from the northern part of Nigeria.

Table 7.33 Urban

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Rural	216835	80.5	103461	65.9
Urban	52630	19.5	53464	34.1
Total	269465	100.0	156925	100.0

Ownership Status: As a consequent of the above, the ownership status of the north part of Nigeria is 72.6%. This high rate of owner occupation are due to cheap house price, relatively thriving cement and leather industries with government policies assisting households to secure their desired properties through mortgage finance.

The ownership status of the southern part of Nigeria is 54.1%; significantly lower than the northern part of Nigeria which is 72.6%. The ownership status is lower due to the high demand for the limited housing stock that push up the property prices significantly and as a consequent making many households not able to afford to access the mortgage market. In addition to this, is the absence of the government subsidised housing scheme for the southern part of Nigeria.

Table 7.34 Ownership

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Not Owned	73755	27.4	71974	45.9
Owned	195710	72.6	84951	54.1
Total	269465	100.0	156925	100.0

Infrastructural Development: The impact of infrastructural development in the northern Nigeria revealed that 65.3% of the households does not have electricity supply and 34.7% of the households does not have water supply. The non-availability of electricity and water supply in the Northern part of Nigeria should depress the demand for housing and consequently, the demand for mortgage finance.

The development of infrastructural facilities in the southern part of Nigeria can be adjudged to be at a very poor state compared to the northern part of Nigeria. Having established the critical role infrastructure play in the household demand for housing and mortgage finance, the delinquent state should decrease the demand for housing and mortgage finance. This is because such poor state will increase the cost of property prices and many households may not be able to afford buying their

desired properties

Table 7. 35   Electricity

Electricity Availability	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
No	174933	65.3	57449	36.6
Yes	93532	34.7	99476	63.4
Total	269465	100.0	156925	100.0

Table 7.36 Water Supply

Water Supply Availability	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
No	246732	91.6	140379	89.5
Yes	22733	8.4	16546	10.5
Total	269465	100.0	156925	100.0

The dataset revealed that 36.6% of the households does not have electricity supply and 89.5 % of the households does not have water supply. The non-availability of electricity and water supply in the southern part of Nigeria should depress the demand for housing and consequently, the demand for mortgage finance.

Family Structure: The family structure of the northern part of Nigeria is critical to their consumption pattern and the followings were considered for critical evaluation.

Polymal (number of wives in the household): The dataset revealed that 96.5% of the households in the northern part of Nigeria does not have more than one wife/partner in the household. However, 3.5% have more than one wife.

The dataset revealed that 99.2% of the households in the southern part of Nigeria does not have more than one wife/partner in the household. However, 0.8% have more than one wife. Based on this, it can be inferred that households in a nuclear family should demand less rooms and mortgage finance compared to the households with more than one wife/partner.

Table 7.37 Polymal

Number of Wife/Partner	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
No more than one wife	260109	96.5	155724	99.2
More than one wife	9356	3.5	1201	0.8
Total	269465	100.0	156925	100.0

Family Size: The dataset revealed that 51% of the households in the northern part of Nigeria have an

average of six individuals living in the property. Based on this, as the number of household increases, so also is the demand for housing and consequently, demand for mortgage finance.

The dataset revealed that 71% of the households in the southern part of Nigeria have an average of six individuals living in the property. Based on this, as the number of household increases, so also is the demand for housing and consequently, demand for mortgage finance.

Table 7.38 Family Size

	Northern Nigeria		Southern Nigeria	
Family Size	Frequency	Percent	Frequency	Percent
1-6	137387	51.0	112135	71.5
7-15	129483	48.0	44480	28.3
16-25	2595	1.0	310	0.2
Total	269465	100.0	156925	100.0

Based on the above, it is evidenced that northern part of Nigeria has larger family size compared with the southern part of Nigeria and as a consequent, the households in the northern part of Nigeria should demand more rooms and consequently, increase their demand for mortgage finance.

Marital Status: The marital status of the northern part of Nigeria show that 61.4% of the households are not married and 38.6 % are married. This evidenced it that single households are more than married households.

The dataset revealed that unmarried households in the southern part of Nigeria are 68% and married households are 32%. The low rate of marriages in the south part of Nigeria is due to the very expansive cost of marriages, high poverty rate and higher unemployment. Consequently, this can influence the demand for mortgage finance as less unmarried couples demand less mortgage finance compared to married. This require further investigation to determine the impact on the demand for mortgage finance.

Table 7.39 Marital Status

Marital Status	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Not married	166545	61.4	106687	68.0
Married	103920	38.6	50238	32.0
Total	269465	100.0	269465	100.0

Sex: The dataset on household sex revealed that 52.4% of the household in the northern part of Nigeria are male while female in the household are 47.6%. Based on tradition, the more male in the northern part of Nigeria and being the head of the household that should lead to increase in the demand for housing and consequently, increase the demand for mortgage finance.

The southern part of Nigeria dataset of households revealed that 49.9% of the households are male while female in the household are 50.1%. This evidenced it that there are more females in the south part of Nigeria compared to males in the household

Table 7.40 Sex

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Female	128294	47.6	78543	50.1
Male	141171	52.4	78382	49.9
Total	269465	100.0	156925	100.0

Education: The role of education is pivotal to the development of the mortgage market. The level of education of the northern part of Nigeria is considered relatively low compared to the southern part of Nigeria.

Literacy: The level of literacy in the north part of Nigeria is considered very low and based on the human capital argument; households with very low literacy level will have relatively low income, which may not enable them to access housing and consequently, demand for mortgage finance. In the northern part of Nigeria, households who cannot read and write are 59.2% while those that can read and write are 40.8%. This will reduce the ability of the households to demand for housing and consequently, demand for mortgage finance.

In the southern part of Nigeria, households who cannot read and write are 34% while those that can read and write are 66%. This will increase the ability of the households to demand for housing and consequently, demand for mortgage finance.

Table 7.41 Literacy

Literacy level	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
No	159558	59.2	53430	34.0
Yes	109907	40.8	103495	66.0
Total	269465	100.0	156925	100.0

In addition to the above, the dataset of education qualifications obtained revealed that 69.8% of the households in the northern part of Nigeria have primary school leaving certificate. This is considered relatively low and as a consequent, such households may not increase their demand for housing and consequently, demand for mortgage finance. Furthermore, less than 10% of the sample surveyed obtained tertiary and postgraduate certifications.

The southern part of Nigeria level of education is considered very high and of better standard compared to the northern part of Nigeria. Households are adjudged high literate and based on human

capital argument, such households should have a better paying job with good income that should enable them to demand for housing and consequently, demand for mortgage finance.

Table 7.42 Educational Qualifications

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
No Qualification	12585	4.7	4164	2.7
Primary Education	188152	69.8	64986	41.4
Secondary Education	42163	15.6	48418	30.9
Tertiary Education	23281	8.6	33291	21.2
Postgraduate Education	3284	1.2	6066	3.9
Total	269465	100.0	156925	100.0

Based on the above, this research expects the households in the southern part of Nigeria to demand more housing and mortgage finance than the northern part of Nigeria. This will further be investigated to reaffirm this statement.

Employment Status: The dataset revealed that households' rate of unemployment in the northern part of Nigeria is 68.2% and the households in employment is 31.8%. This evidenced it that there is high rate of unemployment in the northern part of Nigeria and as a result of this, demand for housing and mortgage finance will be very low. This is because the affordability criteria for obtaining a mortgage cannot be met.

The dataset revealed that households' rate of unemployment in the southern part of Nigeria is 61.5% and the households in employment is 38.5%. This evidenced it that there is high rate of unemployment in the south part of Nigeria. However, most of the households that are unemployed are in the informal sector of the economy. The demand for housing and mortgage finance is still low. This is because the affordability criteria for obtaining a mortgage cannot be met.

Table 7.43 Employment Status

	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
Not Employed	183653	68.2	96441	61.5
Employed	85812	31.8	60484	38.5
Total	269465	100.0	156925	100.0

Household Income Level: The household income level is a necessity to demand for housing and mortgage finance. The dataset revealed that 67.7% of the households does not have income. This implies that the affordability criteria for households in the northern part of Nigeria is very low and as a consequent, demand for housing and mortgage finance will be relatively low.

This research expects households in the southern part of Nigeria to have higher level of income compared to the northern part of Nigeria. The dataset revealed that 63.4% of the households does not have income. However, there is a vibrate middle-income class in the southern part of Nigeria. This does affect the affordability criteria for households in the southern part of Nigeria and as a consequent, increase the demand for housing and mortgage finance.

Table 7.44 Household Income

Household Income (N)	Northern Nigeria		Southern Nigeria	
	Frequency	Percent	Frequency	Percent
0	182398	67.7	99476	63.4
625-24,375	21288	7.9	8945	5.7
25000- 50000	63597	23.6	35151	22.4
50625-117500	2185	0.8	13353	8.5
Total	269465	100.0	156925	100.0

In summary, having critically examined the economic activities, geographical composition, ownership status, infrastructure facilities, property size, family size, marital status, education attainment, employment status, industry where household work and household income for the northern part of Nigeria, the demand for housing and mortgage finance should be low and those factors and determinants should influence households' ability. However, these factors for the southern part of Nigeria show significant improvement compared to the Northern part of Nigeria. To provide more evidence to support the above, this research will adopt further econometric analysis for further investigations to clearly identify the factors that influence the demand for housing and mortgage finance along the north-south divide.

The next section presents the econometric estimates of the demand for housing and demand for mortgage finance along the north-south divide.

The Tables (7.45 and 7.46) below show the results of the demand for housing and demand for mortgage finance which include variables and coefficients of the model for Northern and South part of Nigeria. Based on the results presented, critical discussions were conducted. The discussion brought out the salient inference to the research and thus, a significant contribution to literature.

Table 7.45 <u>Demand of Housing disaggregated by North-South Divide</u>.

Variables	Northern Nigeria	Southern Nigeria
No of Observations	269,466	156,926
Constant	1.40 (89.27)*	1.38 (62.06)*
Unrelated	0.64 (12.67)*	0.78 (27.88)*
Urban	-1.14 (-90.91)*	-1.13 (-89.03)*
Geographical Differences	0.20 (18.41)*	-0.11 (-8.12)*
Electricity	0.63 (58.96)*	1.00 (80.43)*
Water Supply	0.21 (12.17)*	-0.12 (-6.63)*
Polymal	-0.01 (-0.30)	0.44 (6.81)*
Family Size	0.25 (182.40)*	0.22 (103.90)*
Age	0.003 (18.32)*	0.004 (19.44)*
Sex	-0.04 (-4.71)*	-0.02 (-1.77)
Marital Status	0.27 (28.31)*	0.12 (9.49)*
Literacy	0.41 (3.54)*	0.13 (8.21)*
Educational Attainment	0.11 (14.70)*	0.06 (6.73)*
Years of Schooling	0.006 (15.43)*	0.005 (5.52)*
Industry	0.21 (14.55)*	0.24 (13.43)*
Log Total Income	0.02 (8.20)*	0.04 (10.27)*
Adjusted R-Squared	0.15	0.14
Standard Error	2.33	2.19
F-Statistics	2918.10	1629.65
P-Value	0.000	0.000

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (*P* value ≤ 0.001; * *P* value ≤ 0.05)**

Table 7.46 <u>Demand for Mortgage Finance disaggregated by North-South Divide</u>

Variables	Northern Nigeria	Southern Nigeria
No of Observations	269,466	156,926
Constant	0.01	-0.94
	(0.47)	(-37.76)*
Unrelated	-0.25	-0.17
	(-5.14)*	(-5.22)*
Urban	-0.95	-1.03
	(-79.17)*	(-73.57)*
Geographical Differences	-0.02	-0.82
	(-2.00)**	(-17.34)*
Electricity	0.01	-0.20
	(0.82)	(-13.43)*
Water Supply	0.06	-0.31
	(3.76)*	(-15.55)*
Rooms	0.30	0.56
	(97.67)*	(140.75)*
Parrule	0.00	0.61
	(0.00)	(13.30)*
Polymal	-0.07	0.34
	(-2.31)**	(4.21)*
Family Size	0.02	0.03
	(9.50)*	(10.00)*
Age	-0.001	0.005
	(0.00)	(0.00)
Sex	-0.01	-0.02
	(-0.90)	(1.50)
Marital Status	1.02	0.19
	(92.73)*	(14.92)*
Literacy	-0.01	-0.02
	(-1.00)	(1.50)
Educational Attainment	-0.23	-0.09
	(-29.25)*	(-10.11)*
Years of Schooling	0.004	-0.005
	(4.00)*	(-5.00)*
Industry	0.16	0.18
	(10.06)*	(9.68)*
Log Total Income	0.04	0.03
	(14.34)*	(8.25)*
NageIkerke R-Squared	0.21	0.35

Note: Reported values are parameters estimates with related _t-statistics_ in parentheses (** _P_ value ≤ 0.001; * _P_ value ≤ 0.05)

The results of North-South above estimations indicated the apriori expected results. However, there are slight differences in the size of the coefficients, based on the results, difference in the demand for housing and demand for mortgage finance in the North and South were Identified.

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The coefficient of family size is positive and statistically significant for demand for housing and demand for mortgage finance for both north and south Nigeria. This evidenced that the larger the family size, the more the demand for more rooms to accommodate their household. Furthermore, the household will demand for mortgage finance as the family size increase, thus, conforming with the theoretical perspective.

As expected, the coefficient of the number of unrelated persons living in the household is positive and statistically significant for the demand for housing in both north and south part of Nigeria. This conform to the theoretical perspective, the more the number of persons living in the household, the more the number of rooms needed. On the other hand, the coefficient of the number of unrelated persons on demand for mortgage finance for both north and south is negative and statistically significant. The results evidenced it that the number of the unrelated persons in the household is less likely to influence the household decision to the demand for mortgage finance.

The coefficient of the urban variable is negative and highly statistically significant for demand for housing and demand for mortgage finance for the North and south Nigeria. The result evidenced that household demand for smaller houses in the urban area compared to the rural areas. This can be attributed to the expensive accommodation in the urban centres and as a consequent, there will be less demand for mortgage finance to buy their desired properties.

The coefficient of age is positive and highly statistically significant for demand for housing for both North and South Nigeria. This evidenced that the demand for housing (more rooms) increases, as the household advances in age. This is because as the household advances in age, the family size tends to increase and requires more rooms to accommodate their households. The coefficient of age is mixed for demand for mortgage finance for the North and South Nigeria. The coefficient of age on demand for mortgage finance for the North Nigeria is negative. This implies that in North part of Nigeria, as the household advances in age, there is a less chance that the household will demand for mortgage finance. The coefficient of Age in South Nigeria is positive as expected. This evidenced it that, as the household advances in age, the demand for mortgage finance will increase.

The coefficient of marital status is positive and highly statistically significant for demand for housing and demand for mortgage finance for both North and South Nigeria. This evidenced it that in both north and south Nigeria, married couples increase the demand for housing and as a consequent, demand for mortgage finance. This is based on the argument that married couples have better credit risk and can pull resources together which give them a better chance to access the mortgage finance.

The coefficients of literacy, Years of schooling and educational attainment are positive and highly

statistically significant for demand for housing both North and South Nigeria. This evidenced it that the level of literacy, years of schooling and the educational attainment increases the household income. This is based on the argument that the level of literacy, years of schooling increases, and then the household should have a better income and as a result, the household can increase their demand for housing and consequently, demand for mortgage finance.

On the other hand, the coefficients of the level of literacy, years of schooling and educational attainment are negative and highly statistically significant for demand for mortgage finance for both North and South except for the North Nigeria years of schooling coefficient which is positive and statistically significant. This evidenced that when the households are considering mortgage finance, the level of literacy, years of schooling and educational attainments is less likely to influence household decisions to demand for mortgage finance.

The coefficient of industry is positive and statistically significant for demand for housing and demand for mortgage finance for both North and South Nigeria. This evidenced it that the industry where the household works, can influence their decision to demand for housing and as a consequent, demand for mortgage finance.

The coefficient of household total Income is positive and statistically significant for demand for housing and demand for mortgage finance for both North and South Nigeria. This evidenced it that as the household income increase, then the demand for housing (more rooms) will increase and hence, the household will be in better position to demand for mortgage finance.

Difference in North-South Demand for Housing

The difference in the demand for housing in the North and South Nigeria were prominent with the coefficients of the following variables considered:

The coefficient for geographical difference within the North and South Nigeria is mixed. The coefficient of geographical difference on demand for housing in North Nigeria is positive and highly statistically significant. This evidenced it that in North part of Nigeria, the household in this location demand for more rooms compared to the south part of Nigeria. This could be attributed to the large family size and multiple partners/wives prominent in the north part of Nigeria. Furthermore, this research can infer that households in the south part of Nigeria, demand for less number of rooms.

The impact of water supply on the demand for housing revealed mixed results. The coefficient of the water supply on demand for housing for the Northern part of Nigeria is positive and statistically

significant. This evidenced that demand for housing (more rooms) increases when the property has access to regular supply of water. On the other hand, the coefficient of water supply on demand for housing for south part of Nigeria is negative and statistically significant. This evidenced it that household demand for housing falls when the property does not have access to water supply.

The coefficients of polymal (man with more than one wife) are mixed. The coefficient of polymal for the north part of Nigeria is negative. The evidenced it that the number of the wives/partners in the household does not influence the number of rooms that household will demand. As excepted, the coefficient of the south part of Nigeria is positive and statistically significant. This evidenced it that as the number of the wives/partners in the household increase, the demand for housing (more rooms) should increase, all things remain the same.

Difference in North-South Demand for Mortgage Finance

The discussion in this section identified the difference in the demand for mortgage finance for the north-south part of Nigeria.

The coefficient of electricity is mixed. For the northern part of Nigeria, the coefficient is positive. Based on this result, it evidenced it that availability of electricity does influence the household demand for mortgage finance. This implies that households in Northern part of Nigeria will demand for mortgage finance when there is availability of uninterrupted electricity supply. This is not the same for the south part of Nigeria. The coefficient of the electricity is negative and statistically significant. This evidenced that the households will demand less mortgage finance when the electricity supply is unavailable. This does influence the demand for mortgage finance.

The coefficient of water supply is mixed. The north part of Nigeria coefficient is positive and statistically significant. This result evidenced it that households increase their demand for mortgage finance when the property has adequate water supply. This is not the same for the south part of Nigeria. The coefficient of water supply is negative and statistically significant. This means that households in the south part of Nigeria demand less of mortgage finance when there is non-availability of water supply.

The coefficient of parrule capture the impact of intergenerational transfer from parent to their children. The result for the north part of Nigeria revealed that intergenerational wealth transfer does not exist and as such, does not influence the household decision to buy their desired properties through mortgage finance. However, the result of the parrule for the south part of Nigeria is positive and highly statistically significant. This evidenced it that intergenerational wealth transfer from parents to their children in south part of Nigeria does increase the households' ability to demand for mortgage finance.

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The coefficient of polymal (man with more than one wife) on the demand for mortgage finance is mixed. The coefficient of polymal for the northern part of Nigeria is negative. This evidenced that the household with more than one wife demand less mortgage finance in the northern part of Nigeria. This implies that this factor cannot influence the household demand for mortgage finance. This situation is different for the south part of Nigeria. The coefficient of polymal is positive and statistically significant. This evidenced that the households with more than one wife demand more of mortgage finance. This implies that those households with more than one wife can pull resources together and have a better chance to access mortgage finance.

The coefficient of years of schooling is mixed. The coefficient of years of schooling for Northern part of Nigeria is positive and statistically significant. This evidenced it that as the years of schooling increases, the household will increase the demand for mortgage finance. The opposite was observed from the result of the southern part of Nigeria. The coefficient of years of schooling is negative and statistically significant. The evidence that the households in southern part of Nigeria, with will fewer years of schooling, demand less of mortgage finance to buy their desired properties.

In summary, this research found out the following from this section:

First, there are slightly difference in the determinants, factors that influence the demand for housing and demand for mortgage finance in the northern and southern parts of Nigeria. However, despite the slight differences, determinants and factors were identified. The household income, level of education, marital status, industry, family size, age, geographical location and infrastructural facilities are important factors and determinants that can influence the demand for housing and consequently, demand for mortgage finance.

Second, there are disparities in factors such as geographical differences, water supply and polymal (man with more than one wife) on the demand for housing for the northern and southern part of Nigeria. Based on the above, the research found out that in northern part of Nigeria, geographical difference does increase the households demand for housing where there are adequate infrastructural facilities particularly electricity and water supply. These infrastructures drive the demand for housing. However, this is not the same impact in the southern part of Nigeria. From the results, geographical difference of the households does not influence the demand for housing because southern households demand smaller number of rooms. We can deduce that households demand for housing in the southern part of Nigeria are influenced by availability of electricity supply but can get alternative water supply either from rainfall and community wells.

Third, the role of religion was considered as an influential factor in the demand for housing particularly

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in the northern part of Nigeria. The coefficients of family size and marital status are larger for the northern part of Nigeria compared to the southern part of Nigeria. This is based the fact that northern part of Nigeria is predominately Muslim and by the religion can married up to four wives. This implies that as the family size increases, the northern Nigeria household will increase their demand for more rooms to accommodate their families. When considering the southern part of Nigeria with relatively smaller family, demand for housing will decrease from this perspective.

Fourth, the educational qualifications, years of schooling and literacy levels was considered reasonable in the northern part of Nigeria which should influence the demand for housing, however, relatively the household income is smaller compared to southern part of Nigeria. The southern part of Nigeria has a vibrate middle-income class which does drives the demand for housing and mortgage finance.

Fifth, the impact of intergenerational wealth transfer from parents to their children was identified as an important factor that influences the households demand for mortgage finance in the southern part of Nigeria. This contributed to the high ownership status of the southern part of Nigeria without government incentives to home ownership. However, the intergenerational wealth transfer impact on household in northern part of Nigeria is not significant.

The next section will further critically investigate the differences in the demand for housing and mortgage finance in Nigeria from the regional perspective.

7.9.2   Regional Differences in the Demand for Housing and Mortgage Finance

This section builds on the investigation on the north-south divide above; the section reviewed the demand for housing and mortgage finance along the regional geopolitical zones. Nigeria is divided into six geo-political zone and each of the zones is made up of five to seven states.

Pictorial View of Regions in Nigeria
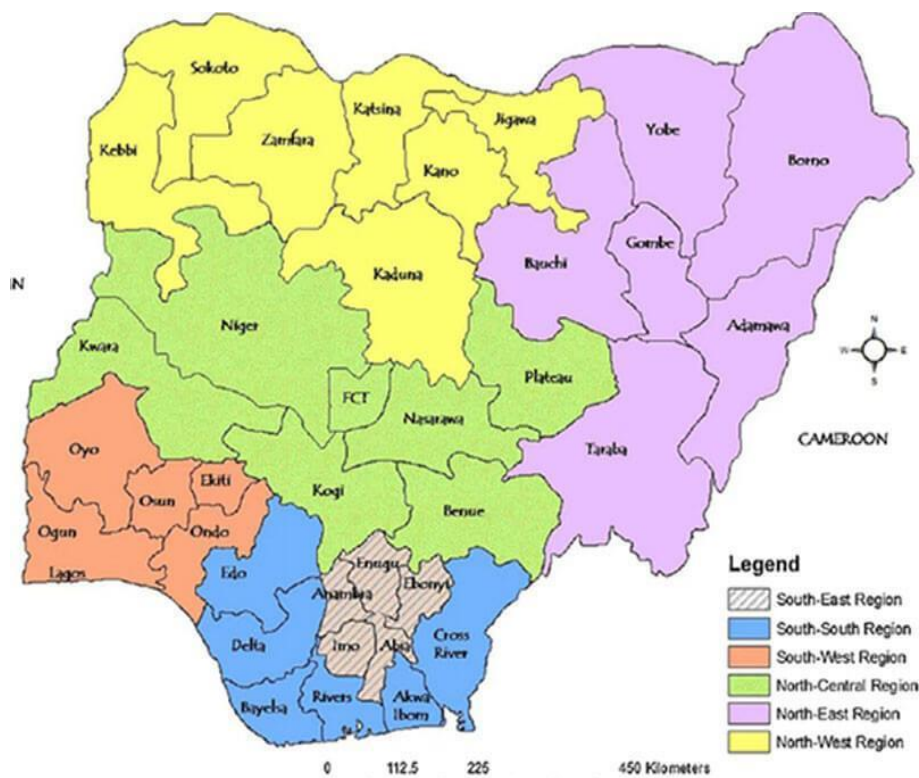
Peculiar Characteristics of the Regions

North-Central Region: This region is made up of seven states, which have similar characteristics such as language, occupation, culture, ideology, religion and political association and affiliation. The north central is the administrative hub of Nigeria because of the federal capital territory, Abuja where all the federal ministries are located and as a result, the north central region provide relatively new city and cosmopolitan design which is suitable for the development of mortgage market. The major occupations of households here are civil servants, artisans, arable farming and livestock farming, construction and financial services. Other activities in other parts of the regions in mining activities such as marbles, coals etc. The level of literacy is relatively high at 69% and many households have basic education. This influence the household income level, as the poverty level is not high. Tourism activities is popular and population growing in the region is very high due to the adequate infrastructural facilities. The GDP per capita is $2084 (NBS, 2018). Due to these, home ownership is 65%

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and such regions have the potential to influence the household demand for mortgage finance.

North East Region: This region is made up of six states and 13.5% of the population of Nigeria (NBS, 2018). This region is very underdeveloped with very large land mass, one-third of Nigeria land mass. The region has the worst socioeconomic conditions in Nigeria with the average poverty rate of 69%, which is above the national poverty average of 60.9% (NBS, 2018). The major occupation of households in this region are farming, animal husbandry, mineral resources mining, metal craftsmanship etc. Over the last twenty years, the region is experiencing political and religious conflicts, which have affected the development of the housing and mortgage market. Boko Haram provokes these conflicts, which has resulted in displacement and prolong humanitarian crisis making millions of people in need of emergency food assistance. These conflicts have worsened the problem of high youth unemployment and social exclusion increased. The damage to infrastructural facilities in the region has reduced the demand for mortgage finance.

North West Region: This region is mainly an Islamic cultural background and are called Hausa-Fulani. The region has vast stretches of fertile and arable land, which is suitable for tropical crops. Rearing of animal for milk and meats are the prominent economic activities. The region is predominantly Islamic religion and thus have large family size. There is a very high poverty level and unemployment is on the rise due to herdsmen crisis and political instability in the region. The infrastructure facilities that is vital for demand for housing are inefficient to influence particularly the demand for mortgage finance. The educational level is very low and as a consequent, average household income is very low which may prevent households' access to demand for housing and mortgage finance.

South-South Region: This region is mainly Christianity dominated and the economic activities are oil and gas with potential investment opportunities in tourism and agriculture. Other natural resources in the region are clay, chalk, marble and limestone. Many oil companies are in the region. The region has the largest crude oil and natural gas deposit in Nigeria and as a consequent, massive construction are activities present in the region which drives the demand for housing and mortgage finance. The average literacy rate in the region is 88.07%, GDP per capita is $3332, unemployment rate is 24.73% (NBS, 2018) and consequently, household can get better income. The better infrastructural facilities in the region should drive the demand for housing and mortgage finance.

South East Region: This region is predominately Christian community and entrepreneurial. The people in this region are known as Igbos and practice Igbo culture. They are recognised and reputed to be industrious, highly market-oriented and very hospitable. This region is made up of six states and economic activities is the Oil production and agricultural activities such as yam, maize, potatoes, rice,

cashew, plantain and cassava. Oil and gas activities brought construction activities and major oil companies are present in the region. These drives the demand for housing and mortgage finance. Trading in Nigeria manufactured consumable products are significant activities in the region. Unemployment is high but many are involved in informal trading activities. The level of literacy is 89.8% and poverty level is 58%. The GDP per capita within the region is $2344 and unemployment rate is 20% (NBS, 2018). The household average income level is low. However, due to vibrate economy in the south east, this drive the demand for housing and mortgage finance.

South West Region: This region is predominately Christian and Yoruba and practiced Yoruba culture. This is financial hub of Nigeria, 75% of the financial services activities such as banking, Insurance, stock exchange market and trading are prominent in this region. Infrastructures are well developed and due to the financial buoyancy, infrastructural development and industrial investment, many households migrate to the region to settle. The region has the best Universities and educational structure in Nigeria and the literacy level is 81.58%. The unemployment rate is 11.30% and the GDP per capita is $2563. However, the poverty level is very high, 58.41% are below the poverty level (NBS, 2018). The household average income level is low. However, due to vibrate economy in the region, this drive the demand for housing and mortgage finance.

Based on the critical evaluation of the characteristics of the regions above, in order to understand the factors that influence the regional differences in the Nigeria, further investigation using econometrics are revealed below and these will be used to identify the factors that can influence the demand for housing and mortgage finance.

The Table below revealed the regional difference on demand for housing and mortgage finance.

Table 7.47   Regional Estimates of the Demand for Housing

Variables	North Central	North West	North East	South East	South-South	South West
No of Observations	84,896	72,764	111,808	50,204	53,673	53,051
Constant	1.74 (55.22)	1.29 (55.06)	1.66 (56.94)	1.99 (55.60)	0.50 (10.52)	1.30 (38.33)
Unrelated	0.89 (10.67)*	0.19 (2.05)**	0.70 (8.65)*	0.67 (17.40)*	1.07 (14.65)*	0.55 (13.60)*
Urban	-0.73 (-31.34)*	-1.50 (-84.12)*	-0.52 (-20.05)*	-1.70 (-69.72)*	-1.08 (-37.17)*	-0.20 (-10.11)*
Geographical Differences	-0.42 (-24.05)*	0.45 (32.13)*	0.24 (10.40)*	-0.01 (-0.40)	0.33 (10.58)*	-0.10 (-4.10)*
Electricity	0.31 (15.45)*	0.86 (55.15)*	0.26 (12.73)*	1.15 (56.62)*	1.21 (52.30)*	0.18 (8.50)*
Water Supply	0.04 (1.38)	0.38 (16.11)*	0.33 (8.57)*	-0.01 (-0.15)*	-0.13 (-3.31)*	-0.10 (-4.75)*
Polymal	0.10 (1.76)	0.10 (2.50)**	0.04 (0.86)	0.70 (5.42)	0.28 (1.80)	0.63 (8.65)*
Family Size	0.31 (121.17)*	0.22 (105.31)*	0.25 (99.69)*	0.17 (48.82)*	0.25 (61.70)*	0.22 (67.70)*
Age	0.006 (11.36)*	0.003 (14.87)*	0.004 (8.67)*	0.004 (9.50)*	0.006 (11.03)*	0.003 (13.32)*
Sex	-0.01 (-0.34)	-0.04 (-2.58)**	-0.01 (-0.38)	-0.02 (-1.32)	0.03 (1.48)	-0.04 (-2.74)**
Marital Status	0.30 (17.95)*	0.26 (17.20)*	0.001 (0.06)	-0.07 (-3.20)*	0.40 (16.22)*	0.04 (2.57)**
Literacy	0.12 (5.32)*	0.05 (2.77)**	0.06 (2.83)**	0.10 (3.04)*	0.22 (7.33)*	0.06 (2.64)**
Educational Attainment	-0.30 (-2.15)**	0.04 (3.06)*	0.10 (6.80)*	0.11 (7.87)*	-0.02 (-1.27)	0.07 (6.52)*
Years of Schooling	0.01 (6.53)*	0.01 (17.96)*	0.003 (3.78)*	0.01 (4.40)*	0.003 (1.21)	0.01 (4.56)*
Industry	0.38 (14.40)*	0.22 (8.71)*	0.01 (0.60)	0.10 (3.77)*	0.27 (7.87)*	0.14 (4.78)*
Log Total Income	0.01 (2.20)**	0.001 (0.35)	0.02 (4.01)*	0.01 (1.80)	0.04 (5.11)*	0.03 (4.80)*
Adjusted R-Squared	0.17	0.18	0.14	0.18	0.14	0.10
Standard Error	2.39	2.27	2.19	2.09	2.53	1.78
F-Statistics	1106.50	1498.59	729.32	698.51	554.98	356.34
P-Value	0.000	0.000	0.000	0.000	0.000	0.000

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** P value ≤ 0.001; * P value ≤ 0.05)

Table 7.48   Regional Estimates on the Demand for Mortgage Finance

Variables	North Central	North West	North East	South East	South South	South West
No of Observations	84,896	72,764	111,808	50,204	53,673	53,051
Constant	-0.49 (-14.96)*	0.07 (2.92)**	0.37 (10.54)*	-0.12 (-2.51)**	-1.66 (-36.95)*	-1.23 (-27.33)*
Unrelated	-0.003 (0.03)	-0.29 (-3.03)*	-0.27 (-3.53)*	-0.26 (-5.57)*	-0.003 (-0.04)	-0.14 (-2.39)**
Urban	-0.61 (-27.82)*	-1.15 (-57.80)*	-0.67 (-24.10)*	-1.83 (-61.23)*	-0.77 (-27.39)*	-0.58 (-2.42)**
Geographical Differences	0.22 (13.17)*	-0.02 (-1.60)	-0.15 (-5.61)*	-1.09 (-21.37)*	-0.003 (-0.10)	0.14 (5.18)*
Electricity	-0.71 (-35.40)*	0.69 (36.57)*	0.04 (1.75)	-0.03 (-1.00)	-0.07 (-3.13)*	-0.50 (-19.46)*
Water Supply	-0.21 (6.90)*	0.30 (11.00)*	-0.37 (-8.73)*	-0.37 (-8.33)*	-0.29 (-8.34)*	-0.20 (-7.00)*
Rooms	0.29 (58.60)*	0.34 (68.60)*	0.18 (36.00)*	0.49 (70.42)*	0.58 (14.50)*	0.51 (72.28)*
Parrule	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.99 (19.96)*	0.00 (0.00)	0.00 (0.00)
Polymal	0.00 (0.00)	-0.08 (-2.00)**	-0.05 (-0.86)	0.04 (0.22)	0.31 (1.84)	0.50 (5.03)*
Family Size	0.05 (16.67)*	-0.02 (11.00)*	0.01 (5.67)*	0.004 (0.80)	0.05 (14.50)*	0.03 (8.50)*
Age	0.002 (2.00)**	-0.001 (-4.00)*	-0.003 (-3.00)*	0.002 (2.00)**	0.009 (9.00)*	0.005 (5.00)*
Sex	0.04 (2.29)**	0.006 (0.37)	-0.07 (-3.45)*	0.001 (0.04)	0.01 (0.75)	-0.06 (-3.05)*
Marital Status	0.89 (52.23)*	1.06 (58.78)*	1.65 (63.50)*	0.57 (20.46)*	0.08 (3.59)*	0.05 (2.27)**
Literacy	-0.04 (1.91)	0.05 (2.94)**	-0.12 (-5.08)*	0.05 (1.65)	-0.11 (-4.07)*	-0.007 (-0.25)
Educational Attainment	-0.11 (-7.57)*	-0.31 (22.00)*	-0.09 (-5.76)*	-0.16 (-8.72)*	-0.05 (-3.17)*	-0.06 (-4.28)*
Years of Schooling	-0.004 (-4.00)*	0.005 (5.00)*	0.002 (2.00)**	-0.008 (-4.00)*	-0.007 (3.50)*	-0.002 (-2.00)**
Industry	0.26 (9.59)*	-0.30 (-11.45)*	0.11 (3.64)*	0.008 (0.23)	0.20 (6.50)*	0.29 (8.08)*
Log Total Income	0.06 (11.60)*	0.04 (8.20)*	0.07 (11.67)*	0.05 (7.71)*	0.005 (0.71)	0.02 (2.62)**
Cox & Snell R-Squared	0.18	0.19	0.10	0.28	0.25	0.18
Nagelkerke R-Squared	0.25	0.27	0.17	0.39	0.34	0.25

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** *P* value ≤ 0.001; * *P* value ≤ 0.05)

Taking a critical examination of the above table revealed the difference in determinants and limiting factors of households in various regions in Nigeria and based on the findings; identify the factors peculiar to the different regions.

In the Tables (7.47 and 7.48) above, it shows the simultaneous regression estimates for each of the six regions for the demand for housing and demand for mortgage finance. Below are the critical discussions of the findings of the results.

The coefficients of the number of unrelated persons living in the households on the demand for housing are positive and statistically significant as expected, for all the regions in Nigeria. This further emphasized that not only the family size can increase the demand for housing, also, as the number of unrelated persons living in the housing increases, then, also is the increase in the demand for more rooms to accommodate the people living in the property. The coefficients of unrelated persons living in the households on the demand for mortgage finance is negative as expected across the six regions. The evidenced it that the number of unrelated persons living in the household is less likely to influence the household decision to demand for mortgage finance.

The coefficients of urban on the demand for housing are negative and highly statistically significant for all the regions in Nigeria. This evidenced it that the households in the urban centres in the regions demand a smaller number of rooms compared to the households in the rural areas. When considering the demand for mortgage finance, the coefficients for the six regions in Nigeria are negative. This result revealed that households in urban centres demand less mortgage finance to buy their desired properties.

The coefficients of rooms on demand for mortgage finance for all the six regions revealed positive and highly statistically significant. This evidenced that as the number of rooms' increases, then the household demand for mortgage finance increases. This implies that the number of rooms in a property can influence the demand for mortgage finance.

The coefficients of purrule, which used to capture the impact of inter-generational transfer on the six regions, are positive. This evidenced that households with access to inter-generational transfer, have a better chance to demand for mortgage finance. This is because those funds can be used for down payment and deposits for their desired properties.

Regional Differences in Nigeria

The coefficients of family size on demand for housing on the six regions revealed mixed results. The north-central, north- east, south- east, south-south and south-west coefficients are positive except for

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the north-west with a negative coefficient and statistically significant. The positive coefficients evidenced it that as the number of family size increase, then the household demand for more rooms to accommodate the growing size of the family. This is applicable to the north-central, north- east, south- east, south-south and south-west regions in Nigeria. However, for the north-west region, the demand for more rooms falls, as the family size increases. This can be attributed to the high poverty and unemployment in the region. The coefficients of family size on demand for mortgage finance on the six regions are positive and highly statistically significant. This evidenced it that, as the family size increases, so also is the increase in the demand for mortgage finance. This conforms to the life cycle theoretical perspective.

The coefficients of polymal (man with more than one wife) on the demand for housing are positive for all the regions in Nigeria. The results revealed that as the family numbers increases, then the household increase the demand for more rooms to accommodate their families. However, the coefficients of polymal (man with more than one wife) on the demand for mortgage finance revealed mixed results. A quick examination shows that the three regions in the southern part of Nigeria (South-south, south- east and south-west regions) are positive and the other three regions in the northern part of Nigeria (north- central, north-west and north- east) are negative. Based on the evidence provided by the results, the coefficients of the South-south, south-east and south-west regions which is positive implies that households with more than one wives/partner demand more mortgage finance to buy their desired properties. On the other hand, the coefficients of north- central, north-west and north- east are negative which means that households with more than one wife are less likely to demand for mortgage finance. This can be attributed to the high unemployment rate and poverty in the region.

The impact of the infrastructural facilities is critical to the development of the housing and mortgage market. The coefficients of electricity on the demand for housing on the six regions in Nigeria are positive and highly statistically significant. This evidenced it that households in the six regions households increase their demand for more rooms when there is stable electricity supply. This conform to the expectation of this research. On the other hand, the coefficients of electricity on the demand for mortgage finance revealed mixed results. Based on this result, the coefficients of north-central, south- east, south-south and south-west regions are negative while the coefficients of north-west and north- east regions are positive. The results of north-central, south- east, south-south and south-west regions revealed that households in these regions demand less mortgage finance when the properties do not have stable electricity. Furthermore, the households in the north-west and north- east regions of Nigeria, due to the stable electricity, demand more mortgage finance to buy their desired properties.

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The coefficients of the water supply on demand for housing on the six regions in Nigeria are mixed results. The three regions in the northern part of Nigeria (north-central, north-west and north- east) coefficients are positive and the other three regions in the southern part of Nigeria (south- east, south-south and south-west) coefficients are negative. The results evidenced it that households in the north-central, north-west and north- east regions increase the demand for the number of rooms when the properties have adequate water supply. This is not the same for the households in the south- east, south-south and south-west regions. The household in these regions demand less number of rooms when there is no adequate water supply.

The level of demand for housing increases with age for all the six regions in Nigeria. This is evidenced by the coefficients of age on demand for housing, which is positive and highly statistically significant. This is consistent with the life cycle hypothesis, as the household advance in age and their family size expands the demand for housing increases. On the other hand, the results of age on demand for mortgage finance revealed mixed results. The coefficients of North-central, south- east, south- south and south-west are positive. This implies that as the household advances in age, all things being equal, demand for mortgage finance should increase. Furthermore, the coefficients of north-west and north-east are negative and highly statistically significant. This evidenced it that as the households' advances in age, the demand for mortgage finance falls.

The coefficients of marital status on demand for housing for all the six regions revealed mixed results. The coefficients of north-central, north-west, north-east, south-south and south-west are positive. This evidenced that the marital status of occupants is associated with the demand for housing size and thus its housing decisions. The coefficient of south-east region is negative. This evidenced that the marital status of occupants in the region, demand for a smaller number of rooms compared to other regions in Nigeria. The impact of marital status on the demand for mortgage finance for all the six regions was evidenced with the coefficients being positive and highly statistically significant as expected. This is because married couples have better chance to pull their resources together and thus two people have a better credit risk to obtain mortgage finance to buy their desired property.

The coefficients of literacy on the demand for housing for all the six regions are positive and statistically significant. The result evidenced that the household level of literacy can influence the housing size that the household will demand. This is based on the argument that literate household should have a better paying job, thus better income which improve their affordability criteria. However, the coefficients of literacy on the demand for mortgage finance for all the six regions are mixed. The coefficients of north-central, north- east, south- south and south- west are negative. These results evidenced that in the regions identified, level of literacy is less likely to influence the household demand for mortgage

finance. Furthermore, the coefficients of north-west and south- east are positive. These results evidenced it that in the two regions, the level of literacy is more likely to influence on the household demand for mortgage finance.

The coefficients of educational attainment on the demand for housing for all the six regions are mixed. The coefficients of north-west, north- east, south- east and south-west are positive and highly statistically significant. These results evidenced that household educational attainment does influence the demand for housing size. This is based on the human capital argument, which emphasized that the higher the educational attainment the household obtained, the higher the income received and as a consequent, increase the demand for housing size. The coefficients of north-central and south-south regions revealed a negative result. These results evidenced that lower educational attainment in the north- central and south-south regions will reduce the demand for housing size. However, the coefficients of educational attainment on the demand for mortgage finance for all the six regions are negative and highly statistically significant. These results evidenced it that educational attainment is less likely to influence the household decisions to demand for mortgage finance.

Furthermore, the coefficients of years of schooling on the demand for housing for all the six regions are mixed. Based on the results, the coefficients of north-central, south- east, south- south and south-west are negative and statistically significant. The results evidenced it that as the number of years of schooling increases, household decreases their demand for housing size. This can be attributed to household entering house occupation.   However, the coefficients of years of schooling on the demand for mortgage finance for all the six regions are positive. Based on the results, this research can deduce that as the number of years of schooling increases, imperatively, the households will have better paying job, income and consequently, demand for housing increases. These results evidenced it that the years of schooling of households, all things being equal, should influence the ability of the households to increase the housing size.

The coefficients of the industrial sector where the Individuals in the households' works for all the six regions of Nigeria on demand for housing are positive. The results provided the needed evidence to support the argument that the industrial sector where the household works does influence the ability of the household to demand for housing. However, the impact of the industrial sector where the household works on demand for mortgage finance is mixed. The coefficients of the industrial sector on the demand for mortgage finance for the north- central, north- east, south- east, south- south and south-west are positive. This evidenced it that the industrial sector where the household work does influence the households in those regions to demand for mortgage finance. On the other hand, the coefficient of north-west is negative and highly statistically significant.

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The coefficient of household Income level on demand for housing for all the six regions in Nigeria is positive. This evidenced that the higher the household Income, the higher the demand for housing size in Nigeria. This conform to the consumption theory, which stipulate that household consumption is a function of their total income. The results of the coefficients of household income level on demand for mortgage finance for all the six regions in Nigeria are positive. This evidenced that as the household income increases, demand for mortgage finance increases, and all things being equal.

In summary, this research found out the following:

First, there are differences in the factors and determinants that influence the demand for housing and demand for mortgage finance in the six geo-political regions in Nigeria. The regional differences were prominent in the following, such as: household income, level of education, marital status, industry, family size, family structure, age, geographical location and infrastructural facilities are important factors and determinants that can influence the demand for housing and consequently, demand for mortgage finance in the regions.

Second, the state of infrastructural facilities can influence the demand for housing and mortgage finance. This research found out that households in regions with poor infrastructural facilities demand less for housing and consequently less of mortgage finance.

Third, the consumption pattern of households in the regions are influenced by the cultural differences identified. The research found out that there are peculiar cultural doctrines among the regions, which, influences the households demand for housing and mortgage finance. For instance, the Yoruba cultural beliefs emphasized that household should first buy a property to be called home, earlier in the lifecycle. Furthermore, the Yoruba Culture and Igbo Culture encouraged large family size and as a consequent, increase the demand for housing and mortgage finance.

Fourth, religion practices of households within the six regions were influential in the demand for housing and mortgage finance. The three main religions in the Nigeria (Christianity, Islam and Traditional religion), each region is divided among the three main religions and based on the tenets of the religions, which encouraged the purchase their desired properties. For instance, the households that practices Islamic and traditional religions can marry up to four wives and consequently, the family size increase and demand for housing and mortgage finance increases, all things being equal.

Fifth, this research found out that the households with educational qualifications, years of schooling and literacy levels influence the demand for housing and mortgage finance in Nigeria. The results revealed that across the six regions, educational qualifications, level of literacy and years of schooling influences the households to demand for housing and mortgage finance. However, when comparing

the south- east, south –south and south- west regions educational qualifications with that of north-central, north- west, north- east regions, the demand for housing and mortgage finance is higher. This is due to the vibrant middle-income class which does drives the demand for housing and mortgage finance.

Sixth, the household average income is also an important factor to influence the demand for housing and mortgage finance. In the regions, this research evidenced that as the household income increases, so is the demand for housing and mortgage finance. However, the household income in the south-east, south- south and south- west regions are higher compared to the north central, north- west and north- east regions. This research found out that more households demand for mortgage finance in the southern regions compared with the northern regions.

Seventh, this research found out that Political affiliations influence the demand for mortgage finance. The Nigeria regions are divided along two broad political ideology (Conservative and progressive). The political affiliation of the south- east, south- south and south- west regions are conservative and believe in the market economy, meritocracy etc while north central, north- west and north- east regions are progressive with socialism as the core principles. These political affiliations and ideology influence the demand for housing and mortgage finance in the regions.

Eighth, the economic buoyancy experienced in the country drives the demand for housing as well as the mortgage market. In the region, the economic buoyancy captured by the GDP per capita varies and this research found out that as GDP per capital increases in the regions, so also the demand for housing and mortgage finance increases.

Finally, based on the above, this research can conclude that there are regional differences prevalence in the housing and mortgage market in Nigeria.

7.10 Research Question Three (The impact of Credit Rationing on the Demand for Mortgage Finance)

The study of the credit rationing on the demand for mortgage finance is critical to the understanding of the mortgage demand because rationing can influence the household behaviour and welfare. Credit rationing in the mortgage market have been established to affect the household decisions in term of the tenure choice, level of housing consumption and life cycle planning (Leece 2004). In the same vein, the financial deregulation, which can reduce the credit rationing, should have a significant impact on the mortgage market and particularly, the demand for mortgage finance. The institutional structure of the financial market can also be used to identify the presence of mortgage rationing.

The table below show the results of the double hurdle model used to understand the impact of credit rationing in the Nigeria mortgage market. The impact of rationing are two levels, the first level is the impact of rationing on the ability of the households to own their properties or not and the second level is the impact of rationing on the size of the mortgage finance.

The logistic regression model in this research was used to capture the impact of rationing if the households will get a mortgage and truncated regression model was used to determine the impact of the rationing on the size of mortgage finance for those that got the mortgages.

The results are divided into pre and post periods, which was used to capture the period when there was Banks capital recapitalization. In pre 2005, the minimum capital base of Banks was small (N2 Billions) and as a consequent, there were many weak banks which cannot play active role in the lending activities in the mortgage market. Many households were rationed. After 2005, there was a change in the capital base requirement of banks, it was increased to N25 Billions, and as a consequent, the number of banks were reduced significantly, and the banks were bigger and stronger. The banks were able to actively participate in lending in the mortgage market. Based on this, the credit rationing should reduce significantly.

This research will investigate if the credit rationing exists in Nigeria after the 2005 bank recapitalization and how effective are the Banks in providing the long-term capital needed in the mortgage market.

Table 7. 49   Rationed and Non-Rationed Mortgage Demand

	Pre		Post			
	Logistic Regression	Truncated Regression	Logistic Regression	Truncated Regression	Logistic Regression	Truncated Regression
	Ration 2005		Ration 2006		Ration 2007	
Variables	**Coefficient & T-Value**	**Coefficient & T-Value**	**Coefficient & T-Value**	**Coefficient & T-Value**	**Coefficient & T-Value**	**Coefficient & T-Value**
Constant	2.43 (36.34)	-0.58 (-8.24)	3.14 (40.32)	-1.68 (-21.85)	374.16 (94.58)	53.35 (44.89)
Ration	-1.99 (-152.77)*	-	723.55 (71.88)*	-	-669.63 (-133.39)*	-
Household Income	0.03 (9.00)*	0.04 (12.78)*	0.03 (8.67)*	0.03 (10.18)*	0.02 (3.75)*	0.03 (5.90)*
Ration*Household Income	-0.03 (-4.14)*	-0.04 (-4.03)*	-0.01 (-1.20)	0.04 (0.66)	0.02 (3.00)*	0.004 (0.78)
Loan	0.00 (0.00)	-0.09 (-10.83)*	0.00 (0.00)	-0.83 (-8.83)*	0.00 (0.00)	-0.84 (-6.45)*
Ration*Loan	0.00 (0.00)	0.05 (1.99)	0.00 (0.00)	-0.34 (-2.00)**	0.00 (0.00)	-0.19 (-1.19)
Employment Status	-0.14 (-8.05)*	-0.14 (-7.64)*	-0.09 (-5.15)*	-0.13 (-6.53)*	-0.02 (-1.05)	-0.12 (-5.36)*
Ration*Employment Status	-0.21 (-4.95)*	0.20 (3.12)*	-0.24 (-8.00)*	0.04 (1.19)	-0.32 (-11.03)*	0.05 (1.68)
Inflation	0.01 (3.50)*	-0.02 (-10.37)*	-0.10 (-14.57)*	0.11 (26.58)*	-0.88 (-177.60)*	0.11 (31.93)*
Mortgage Interest Rate	-0.11 (-27.5)*	0.13 (32.51)*	-0.08 (-19.75)*	0.09 (24.80)*	-16.08 (-92.41)*	-2.34 (-42.98)*
Ration*Mortgage Interest Rate	-	0.008 (9.03)*	-39.77 (-72.19)*	0.05 (35.74)*	32.46 (138.11)*	-0.50 (-45.16)*
Marital Status	0.42 (31.92)*	-0.16 (-11.35)*	0.33 (23.57)*	-0.05 (-3.48)*	0.38 (25.14)*	0.03 (1.67)
Sex	0.01 (1.00)	-0.04 (-4.35)*	0.06 (0.75)	-0.03 (-4.04)*	0.01 (0.87)	-0.03 (-3.94)*
Rooms	0.45 (226.00)*	-	0.45 (227.50)*	-	0.45 (227.50)*	-
Geographical Differences	-0.16 (-3.37)*	0.60 (9.62)*	-0.16 (-3.42)*	0.51 (8.15)*	-0.17 (-3.52)*	0.50 (8.06)*
Family Size	0.02 (20.00)*	0.25 (186.00)*	0.02 (19.00)*	0.25 (187.25)*	0.02 (19.00)*	0.25 (187.35)*
Age	0.001 (20.00)*	0.004 (21.62)*	0.001 (20.00)*	0.004 (21.80)*	0.001 (20.00)*	0.004 (22.18)*
Electricity	-0.20 (-22.00)*	0.34 (35.41)*	-0.20 (-21.78)*	0.35 (36.61)*	-0.20 (-21.78)*	0.40 (37.18)*
Water Supply	-0.10 (-7.46)*	-0.08 (-5.28)*	-0.10 (-6.30)*	-0.10 (-6.44)*	-0.08 (-6.15)*	-0.13 (-7.99)*
Purrule	-0.16 (-3.39)*	-0.41 (-6.58)*	-0.16 (-3.31)*	-0.32 (-5.14)*	-0.15 (-3.18)*	-0.31 (-5.06)*
Literacy	-0.08 (-8.40)*	0.07 (6.85)*	-0.10 (-8.50)*	0.08 (7.17)*	-0.10 (-8.90)*	0.08 (7.23)*
Educational Attainment	-0.20 (-32.67)*	0.20 (28.92)*	-0.21 (-34.50)*	0.20 (30.54)*	-0.20 (-34.17)*	0.22 (32.32)*
Years Of Schooling	0.003 (3.00)*	0.005 (13.44)*	0.004 (4.00)*	0.004 (9.52)*	0.004 (4.00)*	0.002 (6.28)*
Urban	-1.13 (125.67)*	-0.32 (-24.92)*	-1.14 (113.80)*	-0.31 (-24.56)*	-1.14 (113.80)*	-0.31 (-24.18)*
Industry	0.31 (22.07)*	0.09 (6.02)*	0.32 (22.85)*	0.07 (4.68)*	0.32 (23.00)*	0.06 (3.96)*
Polymal	0.09 (3.32)*	-0.01 (-0.41)	0.08 (2.92)**	0.01 (0.50)	0.08 (2.92)**	0.04 (1.41)
	Nagelkerke R Square - 0.37	Adjusted R Square- 0.13	Nagelkerke R Square - 0.37	Adjusted R Square- 0.13	Nagelkerke R Square - 0.37	Adjusted R Square- 0.14

Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** *P* value ≤ 0.001; * *P* value ≤ 0.05)

The discussion of the double hurdle model was critically analysed from the pre and post

perspective with the aim of comparing the periods to determine the impact of rationing on demand for mortgage finance.

For the logistic regression model, the Ration dummy was used to capture the impact of recapitalization with a value of 1 for pre 2005 and the value of 0 otherwise. The research expects that credit rationing should cease after the bank recapitalization exercise. The review of the pre 2005 coefficient of the Rationing dummy revealed a negative sign and highly statistically significant. This revealed that prior to 2005 households were rationed and the impact of rationing was significant in the mortgage market and as a consequent, many households are not able to access the mortgage market to secure the needed funds to buy their desired properties. In this period, households were rationed based on their income, mortgage interest rate and employment status. The truncated regression model results also evidenced the impact of rationing on the size of the mortgage obtained which are shown in the coefficients of income, mortgage interest rate and employment status.

The post 2005 era after the bank recapitalization, the rationing dummy coefficient show a positive sign and highly statistically significant. This result evidenced it that after the recapitalization policy of 2005, rationing in the mortgage market ceased. This evidenced it that due to the bank recapitalization, many banks were well-capitalized and has wide branch network. Also, as a consequent of the increase in bank capital, this led to increased competition among banks and in order to increase their market share, mortgage finance lending stringent criteria set were relaxed for the households to access mortgage finance. Further investigation revealed that rationing returned in 2007-2008 period in the mortgage market. This was evidenced from the rationing dummy coefficient, which was negative and highly statistically significant. This could be due to the global financial crisis, poor ethical and professionalism, poor corporate governance policies, mismanagement of funds and inexperience staffs. In addition to these, there was significant reduction in the market capitalization of the capital market. The truncated regression model results also evidenced the impact of rationing on the size of the mortgage obtained by households. The was revealed with the impact of rationing dummy variable on the coefficients of income, mortgage interest rate and employment status.

The coefficient of the household Income is positive and highly statistically significant as expected. This revealed that as the household income increases, the demand for mortgage

finance should increases. However, with the impact of rationing on household Income it showed that the level of household income may not meet the lending criteria set and consequently, because of this, many households are credit rationed. This was prevalent in the period prior to 2005. The circumstance was different in the post 2005 period. The impact of rationing on household income was minimal after the recapitalization exercise. However, due to the impact of the global financial crisis on 2007-2008, competitive strategies of banks, many households that cannot get mortgages in the prime lending options, were granted mortgages through another contract option (sub-prime lending) without proper risk management framework in place to monitor such mortgages. As a consequent of the above, rationing continue to exist in the Nigeria mortgage market.

The coefficient of employment status is negative and highly statistically significant. This implies that households without a regular paying job to sustain a living may not be able to obtain a mortgage. This is what was expected in this result due to the high employment rate and poverty rate in Nigeria. This was further confirmed from the impact of rationing on employment status. The truncated regression revealed that the size of the mortgage that the household will get depends on the sector of the economy where the household is employed. Households that are employed in financial sector, Insurance and oil and gas are more likely to get the mortgage finance to purchase their desired properties while others working in other sectors of the economy are likely to be rationed.

The coefficient of inflation is positive and highly statistically significant in the pre-recapitalization period. This show that as the house prices increases, households saving and wealth are eroded and as a consequent, many households are rationed. The coefficient of inflation lost its significance in the truncated regression, though the interactions produced significant pre-recapitalization coefficients with different signs. The coefficient of Inflation was negative and highly statistically significant. This evidenced it that house price inflation increase could be instrumental in rationing households and the size of property households will buy particularly in urban centres will reduce.

The coefficient of mortgage interest rate is negative and highly statistically significant for the logistic regression. The result obtained revealed that households are less likely to be rationed due to mortgage interest rate. However, it emphasized that mortgage interest rate can be used to measure the affordability criteria and the higher the mortgage interest, the more

households will be rationed. Based on the affordability criteria, the households are offered a mortgage contract that they may be able to pay. This was confirmed from the truncated regressions in pre-capitalization and post-capitalization period. Furthermore, the impact of rationing on mortgage interest rate was as expected. Households that cannot meet up are rationed and others that are not, the size of the property the households will buy depends on their affordability index.

The coefficient of marital status for the logistic regression model is positive and highly statistically significant. The results evidenced it that married couples are more likely get a mortgage. This is because married couples can pull resources together and as a result, have better chance to obtain a mortgage. However, single households are likely to be rationed. This is the same position in the pre-capitalization and post-capitalization period. But in the era of the global financial crisis era, single households are more likely to be rationed.

The variable Rooms was used as a measure of the size of the property. The coefficient of the variable is positive and highly statistically significant. This result evidenced it that the household could rationed if the size of the property is considered too big for the household to pay for. This implies that the households will have to reduce the size of their properties or they will be rationed particularly for the households in the urban centres.

The variable Geographical difference was used as a measure of location on the demand for mortgage finance. The coefficient of geographical difference on the household ability to get a mortgage finance is negative and highly statistically significant. This evidenced it that households in the urban centres are more likely to be credit rationed compared to those in the rural areas. In term of the size of the property, the truncated regression result revealed a positive coefficient and it is highly statistically significant. This evidenced it that households' size of properties is rationed particularly in the urban centres compared to rural area. This implies that households in the urban centres demand for properties with smaller rooms and are expensive compared with the rural areas.

Age had the expected sign; the coefficient is positive and highly statistically significant. The results evidenced it that young individuals may be lesser inclined to enter owner occupation before the capitalization of 2005 compared to the individuals of the same age group after the capitalization. This implies that due to the institutional shift in the financial market and the

economy, the expected real wealth might be higher for the recent cohort than the older Individuals.

Family size had the expected sign, the coefficient is positive and highly statistically significant. This means that the larger the household family size, the higher the chance of the households that are being rationed. Given a level of household income, higher family size expenditure will be a greater portion and as a consequent, household may not be able to save for a deposit for a property. In addition, where the deposit can be saved, monthly mortgage payment may be difficult with the growing ages of children and additional household expenditure. This will intensify credit rationing, and this was evidenced in the pre and post capitalization exercise era.

Infrastructural facilities had the expected sign, the coefficient of electricity is negative and highly statistically significant. This implies that due to non-availability of electricity in the property, such households will be rationed. This is evidenced in the pre and post capitalization exercise era. The same result was observed for water supply. The coefficient is negative and highly statistically significant. This implies that households' properties without this key infrastructure facility will not be able to get mortgages and thus, they will be credit rationed.

The Purrule was used as a measure of the intergenerational transfer of wealth from parents to their children. The variable had the expected sign, the coefficient is negative and highly statistically significant. This is due to high poverty level experienced in Nigeria and this is prominent in the northern west and northern east part of Nigeria. This result evidenced it that households without such transfer from their parents may not be able to put down the deposits/equity contributions, given low income level and consequently, those households will be credit rationed.

The educational level of the households had the expected signs, the coefficients of literacy and educational attainments were negative and highly statistically significant. This evidence that households that are not literate and does not have an educational attainment may be credit rationed. This is based on the human capital argument, which emphasized that the more educational attainment the households get, the better is the household income. Based on the above, due to the high illiteracy level and poor educational system in Nigeria, particularly the northern part of Nigeria, most of the households will be rationed. On the

other hand, the years of schooling coefficient is positive and highly statistically significant. This further emphasized that households with many years of schooling is more likely to get mortgages to buy their desired properties. This does conform with the human capital arguments, the more academic qualifications attained through many years of schooling, the better the household income level and such households may be less likely affected by credit rationing.

The coefficient of Urban was negative and highly statistically significant. This finding evidenced it that households in the urban centres are rationed and demand for small properties compared to the rural areas. This is because properties in the urban centres where most of the infrastructural facilities are available are very expensive and due to the relatively low-income level, many households that does not fall within the threshold are rationed. However, the impact of rationing on the households in the rural centres are less severe and that is due to relatively cheap properties in those areas.

The coefficient of industry is positive and highly statistically significant. The variable captures the industry where the households works. The households that works in the sector such as finance, banking, Insurance and oil and gas are more likely to demand for mortgage finance while other households working elsewhere are more likely to be rationed, particularly those households that works in the primary industries in the Nigeria.

7.10.1 MODEL SIGNIFICANCE

This section tested the significance of the demand for mortgage finance with rationing model to determine the overall significance of the model. Model significance means global significance of the model. To the test the global significance of a model, F statistic was used.

In order to carry out this test of hypothesis, the following steps will be carried out.

- Formulate the null hypothesis and the alternative hypothesis

- Build a statistic to test the hypothesis made

- Define a decision rule to reject or not the null hypothesis.

<u>Step 1</u>

To determine whether the model is globally significant, the null hypothesis H_0 will be stated

as follows.

$$H_0 : B_2 = B_3 = \cdots = B_K = 0$$

In the null hypothesis above, it means that the explanatory variables don't explain that the influence on the rationing of the demand for mortgage finance and the capital market is perfect in Nigeria.

$$H_1 : H_0 \text{ is not true}$$

The alternative hypothesis is refuting this claim that the explanatory variables in the model does explain that influence on the rationing of the demand for mortgage finance and the capital market is not perfect in Nigeria.

To test the validity of the R-squared form of *F* statistic was used.

Step 2

F statistic (R-squared form):

$$F = \frac{R^2 (k-1)}{(1-R^2)/(n-k)} = \frac{0.13/26}{\frac{(1-0.13)}{(426395-26)}} = 2450.40$$

Where R^2 is R-squared, k is number of variables used and n is the number of observations used in the model.

Step 3

This critically examine the result of the estimate and compare it with the table value to determine the decision whether to reject or not to reject the null hypothesis.

The decision rule is

$$\text{If } F \geq F_{q, \ n-k}^{\alpha} \quad reject \ H_0$$

$$\text{If } F < F_{q, \ n-k}^{\alpha} \quad not \ reject \ H_0$$

Where $F_{q, \ n-k}^{\alpha}$ is the F distribution from the statistical table and the critical value $F_{q, \ n-k}^{\alpha}$ depends on α (the level of significance), q is the degree of freedom of the numerator and $(n - k)$ is the degree of freedom of the denominator.

Based on the decision rule, the null hypothesis (H_0) should be rejected in favour of alternative hypothesis (H_1) at α (the level of significance) when $F \geq F_{q, \ n-k}^{\alpha}$. Then when the null hypothesis (H_0) is rejected, the research can conclude that $B_2 = B_3 = \cdots = B_K$ are jointly statistically significant at the selected significance level.

From the results in step 2, the estimated F is 2450.40 and $F_{q, \ n-k}^{\alpha}$ = 1 at 90%, 95% and 99% level of significance and since F (2450.40) $\geq F_{q, \ n-k}^{\alpha}$ (1), we can conclude by rejecting (H_0) in favour of (H_1) and conclude that the model is statistically significance at 90%, 95% and 99% level of significance.

In summary, the followings are the findings in this section.

First, prior to the structural change in the banking sector (recapitalization exercise) credit rationing was severe in the Nigeria's mortgage market, thus prevented a lot of households from getting mortgages. However, the structural change in the capital base of banks (Increase in capital base) due the competition among banks led to the relaxation of the strict risk assessment criteria which made many households to get access to the mortgage finance.

Second, this research found out that after the recapitalization exercise, credit rationing ceased in the mortgage market and many households obtained mortgages to buy their desired properties. However, the year 2007- 2008, due to the global financial crisis, bad investment, mismanagement of funds and bad leadership which led to the erosion of the bank's capital base and because of those causal factors, credit rationing resurfaced and very strict risk assessment criteria were introduced.

Third, the impact of rationing was severe on the young population with low income. This emphasized the life cycle theoretical perspective, that consumption is a function of income.

Fourth, this research found out that high urban migration was due to the availability of infrastructures in the urban centres and which resulted in household demand for housing outstripping its supply. This pushed up house prices, thus affecting the affordability of the household. Consequently, demand for rented accommodation increased and households that can enter owner occupation are credit rationed.

In conclusion, this research found out that credit rationing was severe in the mortgage market due to the relatively low average household income, bad risk management framework, volatility in mortgage interest rate, high inflation rate and poor infrastructural development. Furthermore, the alternative hypothesis that credit rationing is a binding constraint on household demand for mortgage finance and the capital market is not perfect was accepted.

The cross-section variables show that there is variation in family size, number of wives, educational attainment, geographical difference, industry, infrastructure influenced the access of households to mortgages, while the size of the property was determined by urban location, age, income and number of rooms. These findings confirm with the Meen (2004) results.

7.11 Research Question Four: To critically Investigate and assess the role of the financial institutions, particularly banks, in determining the supply of funds needed in the Housing market?

The role of the financial Institutions particularly Banks is critical to the development of the mortgage market and as well as providing the needed long-term funds to enable access for the households to buy their desired properties.

This is critical particularly in a developing economy like Nigeria where the financial sector is catalyst for economic growth. This is because a robust financial system will bring about price stability, macroeconomic stability, employment generation and creation and increase in the national output, which enhance the ability of the households to demand for mortgage finance.

The section used a revised model similar to previous studies such as Demirguc-kunt and Detragiache (1998), Anthanasoglou, Brissimis and Delis (2005), Flamini, McDonald, and Schumacher (2009), Awojobi and Amel (2011), Akinwunmi (2009). This model was used to critically investigate the constraints in the financial system, which prevent the Banks from granting the long-term funds needed in the mortgage market.

The variables in the model are divided into bank-specific determinants, industry specific determinants, macroeconomic determinants and institutional determinants. The model structure used a four stages regression framework on datasets from 1981 to 2017. This cover periods where Nigeria financial architecture undergone restructuring in term of recapitalization of the banking sector, Insurance sector, a significant reap output growth, high inflation, debt relief and cancellation and significant increase in the external reserves.

The aim of this section is to determine and identify factors that will influence the banks in Nigeria to grant and supply the long-term funds needed in the mortgage market.

7.11.1 Models Description

Model 1: The model emphasized the internal factors of the banks and how such factors does affect the ability of Banks in Nigeria in granting the long-term funds needed in the mortgage market. The model considered the bank capital, credit risk exposure, cost management and the banks total asset structure. Theoretically, the ability of bank granting long-term funds depends on these four pillars particularly in an emerging economy like Nigeria.

Model 2: The model considered the internal factors of the banks and the industry specific factors affecting the ability of Banks in Nigeria. This model emphasized the influence of the industry specific factors such as the impact of market power, financial deepening within the industry and private bank ownership and impact of foreign banks. The impact of foreign bank and private bank ownership should

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increase the competition among banks which will reduce mortgage pricing. Theoretically, the buoyance of the financial industry can influence the ability of banks in granting the long-term funds needed in the mortgage market.

Model 3: The model emphasized the impact of macroeconomic determinants such as the wealth, cyclical output, inflation rate and crude oil price. The crude oil price was included in the model because of the nature of the Nigerian economy that is mono-cultural economy, which depends on the crude oil for the export income. This model includes also the internal factors and industry specific factors.

Model 4: The model used here emphasized the impact of institutional framework on the ability of the Banks in granting the long-term funds needed in the mortgage market. This considered the impact of rule of law and justice system index, government policies effectiveness, political instability and corruption. In addition to the above, the model included the bank specific variables, industry determinants and macroeconomic influence on the ability of banks in granting the needed long-term fund required in the mortgage market.

The table below show the coefficients of the models and based on this; this research will determine factors that influences the supply of funds from Nigeria financial sector particularly banks to the mortgage market.

Table 7.50 <u>Simultaneous Regression estimates of determinants of Supply of funds needed in the Mortgage finance from Nigerian Banks</u>

	Variables	Model 1	Model 2	Model 3	Model 4
Bank-specific Determinants	Constant	1.64 (0.50)	-8.82 (-2.03)**	-8.40 (-1.58)	0.10 (0.03)
	Loan (T-1)	0.63 (4.30)	0.40 (2.05)**	0.37 (1.87)	0.50 (3.23)*
	Capital	0.14 (0.81)	0.16 (1.04)	0.10 (0.51)	0.10 (0.51)
	Credit Risk	-0.14 (-1.03)	-0.03 (-0.26)	-0.01 (-0.06)	0.20 (1.38)
	Operating Expenses	-0.10 (-0.10)	0.02 (0.15)	-0.02 (-0.12)	-0.21 (-1.32)
	Size (Ln Total Asset)	-0.30 (-0.30)	2.77 (2.32)**	2.99 (1.97)	-0.14 (-1.00)
Industry-Specific Determinants	Market Power		0.33 (2.24)**	0.33 (2.04)**	0.53 (3.70)*
	(CPS/GDP)(%)		1.01 (3.34)*	1.03 (2.94)**	1.00 (2.40)**
	Private Bank Ownership		-0.05 (-0.40)	-0.16 (-1.07)	-0.11 (-1.33)
Macroeconomics Determinants	GDP Growth			0.05 (0.40)	0.10 (0.60)
	Inflation			-0.01 (-0.04)	0.04 (0.22)
	Crude Oil Price (US$/Barrel)			-0.15 (-0.70)	-0.54 (-3.35)*
Institutional Determinants	Government Policies Effectiveness				-1.60 (-3.99)*
	Political Stability				0.30 (1.00)
	Corruption				0.51 (2.30)**
	Development of Insurance sector				1.00 (2.77)**
R-Squared			0.64	0.76	0.71	0.90
F-Statistic			11.79	11.16	6.64	13.91
Prob (F-Stat)			0.000	0.000	0.000	0.000

<u>Note: Reported values are parameters estimates with related *t-statistics* in parentheses (** *P* value ≤ 0.001; * *P* value ≤ 0.05)</u>

A critical discussion of the models developed to answer this research question which is to empirically identify the factors and determinants affecting the supply of funds from Banks to the Mortgage market revealed the following. Each of the coefficients of the variables were discussed below.

<u>Bank-Specific determinants</u>

<u>Capital</u>

The bank's capital is an important variable when considering the ability of Bank to supply the long-term funds needed in the mortgage market. A well-capitalised bank should have a lower cost of

borrowing and as a consequent, should be able to supply the long-term funds needed in the mortgage market. The coefficient of the capital in the model four revealed a positive coefficient as expected. This finding evidenced the theoretical perspective that banks' ability to grant the long-term funds needed in the mortgage market is dependent on how capitalised the financial institutions are particularly banks.

Credit Risk

The bank credit risk captures the total loan to bank deposit and measures the bank exposure to default and asset quality deterioration. Where the banks are exposed to deteriorating asset, such banks will not be able to grant further credit particularly long-term credit like mortgages. Given that such delinquent assets are not tradeable, many banks in Nigeria have been in grave situation. The coefficient of credit risk is negative as expected. This conformed with the standard asset pricing argument. This research of the view that risk-averse stakeholders target credit products that can adjust returns within short periods and seek larger earnings to compensate for higher credit risk. However, granting mortgage finance may not be given priority due to the long period for the loan to mature and the low returns attributed to such product.

Cost Management

The management of the cost is critical to the operational efficiency of Bank. This is particularly in Nigeria where the cost of banking operations is very expensive. The ability to minimize cost will enable the banks to make profit and it is only profitable bank that supply the long-term funds needed in the mortgage market. This is also used as a measuring metrics to measure the management quality. The coefficient of Cost Management is negative. This evidenced it that the high operational expenses reduce the profit of Bank in Nigeria and as a consequent, most of the bank may not increase their exposure to long term credit like mortgage loan. Furthermore, the negative coefficient signals poor management quality of Nigeria banks. The management style can be classified as autocratic where staff developments and welfare are not given priority. This impact the profit margin of Banks and thus limit the capacity of the Nigeria banks to actively participate in the mortgage market. In addition to this, the high cost of banking operations is because banks in Nigeria rely mainly on deposits from government accounts for their funding which increase their liabilities and such funds are less profitable and other expenses attributed to the administration of deposit accounts. Extensive branch network and under development of technologies contributes to the high cost of Banking operation in Nigeria.

Size

The size of a bank is a significant influence on its ability to grant the long-term funds needed in the mortgage market. Big banks (first generation banks) make more profit, charge lower interest rate and

actively participate in the mortgage market. In the Nigeria context, large banks have greater proportion of the domestic market and operate in a non-competitive environment where lending rates are high. The coefficient of size is negative. The evidenced it that the larger the size of the Banks in Nigeria does not translate to higher supply of the long-term funds needed in the mortgage market. This negative coefficient shows that due to the larger size of the banks, the larger bank does not take the advantage of economies of scale to make more profit and as a consequent, the banks are not actively involved in the mortgage market.

The negative coefficient of size evidenced that a non-linear relationship exists due to possible bureaucratic bottlenecks and managerial inefficiencies because of the large size of the first-generation banks in Nigeria.

Lagged Loan: This was used to capture the tendency of banks granting mortgage finance persistently over time particularly in Nigeria due to market structure imperfections or high sensitivity to autocorrelated regional or macroeconomic or Institutional factors. The coefficient of this measures the speed of the mean of reversion where the number of mortgage loans granted by banks may be unstable in the short run but stable in the long run. The value of 0 and 1 indicates that banks grant the long-term funds needed in the mortgage market are persistent and equilibrium level should be return. Flamini at el (2009) emphasized impact of the speed of adjustments, where it is closer to zero, it means a high speed of adjustment and implies a relatively competitive market structure. A competitive market structure environment will make banks to reduce mortgage rate and stringent lending conditions and thus improving household's affordability which will increase lending in the mortgage market. Furthermore, a value closer to one implies a situation of slower mean reversion and thus an indication of a less competitive market which will discourage lending activities in the mortgage market. The coefficient of the variable is 0.63 which evidenced it that Nigeria banks are persistent in lending in the mortgage market, but the financial environment is not competitive enough to impact on the pricing of the loans and stringent conditions to make mortgages affordable in Nigeria.

Based on the above, the research finding here, is that bank specific determinants are not enough determinant of the mortgage finance in the mortgage market. This conforms with other findings in the following studies, Awojobi and Amel (2011), Radrigo and Ramana (2012), King and Levine (1993), Demirguc-kunt and Levine (2008) and Flamini (2009).

Industry-Specific Determinants

In addition to the above, the following variables were discussed.

Market Power

The coefficient of market power is positive, and this evidenced it that banks in Nigeria can easily pass

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on the cost of their inefficiencies to the customers and as a consequent, the banks will supply funds at high cost to their customers particularly in the mortgage market. The impact of market power presence which ensure banks can easily adjust interest rate spread in response to any unfavourable change in the macroeconomic conditions. As a consequent of the presence of market power, there is a possibility of Nigeria banks overcharging their bank customer and due to this, the banks will supply the funds needed in the mortgage market. This conform with the study of Radrigo and Ramana (2012) which emphasized that credit will be expanded when banks are faced with competition and the presence of market power will enable banks to change its strict terms on the mortgage contracts.

CPS/GDP (Credit to private sector to Gross domestic product)

This variable captured the financial depth of an economy. Based on this, the measure of the financial sector relative to the economy can be determined. This is the private credit relative to gross domestic product (GDP). This variable is defined as the domestic private credit to the real sector by deposit money banks as a percentage of the local currency GDP (World Bank, 2016). The higher the ratio, the stronger the financial depth. This should encourage banks active participation in the mortgage market where long-term funds are needed for the development of the market. The coefficient of this variable is positive and statistically significant. This provided evidence that with a robust macroeconomy, the Nigeria financial structure has the financial depth to support the active participation in the mortgage market.

Private Bank Ownership

The variable captures the impact of private bank ownership participation in the mortgage market. This is based on the argument that private banks bring inflow into the financial market. The impact of private banks in Nigeria bring innovations, better products design and create investment vehicles for the development of the mortgage market. The coefficient of private bank ownership is negative and statistically insignificant. This evidenced that private bank in Nigeria does not play active role in the mortgage market.

Based on the above, this research found out that industry-specific determinants are significant influence on the supply of funds in the mortgage market in Nigeria, particularly market power and credit to private sector to Gross domestic product. Furthermore, the inclusion of the industry specific determinants however, increased the R-squared from 0.64 to 0.76. The next section examined the impact of macroeconomic determinants on the ability of banks to grant the long-term funds needed in the mortgage market.

Macroeconomic determinants

In addition to the above, the following macroeconomic determinants were considered.

GDP growth

A consistent growth in the GDP of an economy should increase the ability of banks to grant the long-term funds needed in the mortgage market. This is because the consistent GDP growth should support the financial system which is the bedrock of the mortgage market. The coefficient of the GDP growth is positive as expected. This evidenced it, as there is a consistent growth in GDP, banks should increase the supply of funds needed in the mortgage market. This is confirmed in Sugimoto (2010).

Inflation

The coefficient of inflation rate is negative as expected and this evidenced it that the general increase in price level does not directly influence the supply of the long-term funds needed in the mortgage market. This is because an unexpected change could raise the costs for the banks and thus, may impact on the market. Also, a positive coefficient may signal high cost to the banks due to imperfect interest rate adjustment as banks may not be able to pass on the cost to the households in form of high pricing of mortgage contracts. This is confirmed in Strumeyer (2017).

Crude Oil Price

The Nigeria economy is mainly dependent on oil revenue as the major export commodity. This research is of the view that there should be a massive and significant development in the mortgage market. The coefficient of the variable is negative. Due to the massive revenue from oil particularly when its prices are high tends to cause Dutch-diseases. This is because as price of oil raises, oil revenue increase significantly and thus raises exchange rates. As a consequence, it leads to adverse impact on the balance of payments. The impact of the Dutch-diseases has led to the decline in the development of the housing market and fall in the supply of funds in the mortgage market. Furthermore, due to the short-term funding nature of the Nigeria banks, most banks reduce its supply of funds due to the low rate of mortgage loans and this depress the mortgage market.

Based on the above discussion, this research found out that macroeconomic factors have significant influence on the supply of funds by banks in the mortgage market.

The next part of this section will investigate the influence of institutional determinant on the supply of funds in the mortgage market.

Institutional Determinants

In addition to the above, the following macroeconomic determinants were considered.

Government Policies Effectiveness

The variable was used to investigate the impact of government housing policies on the supply of the funds needed in the mortgage market. Effective government policies should boost the supply of funds

in the mortgage market. Where there are ineffective housing policies, the banks will be reluctant to grant to long-term funds needed in the mortgage market. The coefficient of this variable is negative and statistically significant. This result evidenced it that ineffective housing policies in Nigeria, has restricted the supply of funds in the mortgage market. This is confirmed in Davies (2010).

Political stability

Political stability is critical to the development of the mortgage market. Financial institution particularly banks will only supply funds needed in the mortgage market where there is a stable political atmosphere. This is because where there is political instability; there are high risk of the banks losing their investment. Furthermore, mortgage finance being a long-term investment, banks will be willing to investment their funds were there is assurances of high return on their investment. The coefficient of political stability is positive as expected. This is due to the democratization of Nigeria politics for the past twenty years which have brought investment and development into the mortgage market. This evidenced it that political stability is a critical factor that influence the supply of long-term funds needed in the mortgage market in Nigeria. This is confirmed in Natarajan (2010).

Corruption

The impact of corruption is significant to the development of any economy. High level of corruption will depress the development of the mortgage market. Corruption here is anything that does not follow the due process. The coefficient of corruption is positive and statistically significant. This result evidenced that the processes and procedures of granting mortgage finance are flawed. This is because banks have different risk assessment criteria for the different categories of households and social status, religion and ethnicity can be used to determine the households that will be granted the mortgage loans. Due to the flaw in the processes, corruption could influence the supply of funds for mortgage finance. Furthermore, bank staffs collude to defraud the bank which increase the mortgage loan portfolio, initial fees are paid but the loan will go bad at a future date. This is confirmed in Hanming et al (2014).

Development of Insurance sector

A well-functioning insurance sector should prevent losses that could occur to the insurer. Where this is well-developed, banks should be willing to increase the supply of funds in the mortgage market. However, if the insurance sector is not developed and cannot prevent future risk, financial institutions particularly banks will limit their lending activities in the mortgage market. The coefficient of this variable is positive and highly statistically significant. This finding provides the evidence that a robust insurance sector encourages the supply of the long-term funds needed in the mortgage market. This can be attributed to the reform of the insurance sector and increase in the capitalization which

increase the insurance company's financial depth to cover more risks including mortgage finance.

Based on the above, this research could confirm that institutional determinants are significant factors that can influence the supply of funds in the mortgage market. This is confirmed in Tsyganov et al (2014).

In summary, the followings were deduced from the findings in this section.

Firstly, the bank internal indicators such as the credit risk, operational expenses, capital base and total asset size are not the only factor that can influence the lending pattern of the banks in Nigeria. Although the coefficients of these variables are not statistically significant, but this research is of the view that the financial position and strength of the banks is an important consideration when banks want to take active part in lending in the mortgage market.

Secondly, the industry-specific determinants provided the evidence that the activities of banks in term of lending behaviour are influenced by the industry. In the Nigeria context, the research evidenced it that banks with the market power can easily influence the lending activities in the mortgage market and as a consequent, the mortgage interest rate, deposit and documentation requirements can be adjusted. Furthermore, the depth of the financial system encouraged and influenced to a greater extent the capacity of financial institutions particularly banks to actively supply the long-term funds needed in the mortgage market.

Thirdly, the results from the macroeconomic indicators such GDP growth, inflation and crude oil price evidenced it that a robust macro economy can influence bank supply of funds in the mortgage market. This research found out that the rapid growth in the economy over the past ten year have created an avenue for the growth in the development of the mortgage market and as a consequent, banks could supply the needed funds in the mortgage market. Furthermore, the inflation rate did not discourage banks from lending to household to buy their desired properties. However, the revenue from oil has created volatility in the balance of payment account, thus, have an adverse impact on the exchange rate and led to the neglect of the housing market. Overall, the macroeconomic performances have influenced Bank performance and thus the supply of funds in the mortgage market.

Lastly, this research provided evidence that institutional structures are great determinants of the supply of funds needed in the mortgage market. The effectiveness of the government housing policies could influence the financial Institution particularly banks to increase their supply of the loan term funds. For instance, government guarantee and contributory housing scheme as part of the housing policies would have further improve the supply of funds. Furthermore, Political stability is an influential determinant of supply of funds particularly in Nigeria that has a long period of military rule. The

development of the insurance sector and its recapitalization further enhance the supply of funds in the mortgage market.

7.12   The research question five: To critically investigate the perceived operational efficiency and effectiveness of banks and the mortgage market.

This section critically investigated the perception of senior bankers and loan managers about the mortgage markets and examined the operational efficiency and effectiveness of the industry in term of mortgage finance provision, identify the inefficiency in the market and based on the results of the survey, this research identified the constraints in the mortgage finance market.

The section should complement the quantitative aspect of this research and should triangulate the findings, which will be a useful tool to make informed recommendations.

Research Process

Building on chapter six, a detailed questionnaire was designed which target the opinions of senior bankers and loan managers. The questionnaire was distributed online and through the chartered institute of Bankers of Nigeria. The institute, which the umbrella body of bankers and financial experts' platform was used for the distribution.

The questionnaire was available online from December 14, 2018 to January 14, 2019 (1 month). The periods were selected to improve on the response rate because of the holiday season. The software used for the distribution was Bristol online survey software.

Potential Biases

This section discussed the identified biases in qualitative research and how the identified biases can be reduced to improve the quality of the research.

The goal of this research is to reduce bias and make sure questions are thoughtfully posed to the respondents to get their true feelings and opinions.

It is pursuant to identify the likely biases in qualitative research and the understanding of such biases will improve the quality of this research and the reliability of the research.

Sarniak (2015) studies on qualitative research emphasized that risk of biases in qualitative research can come from the three actors in the research which are: the questions, the respondents and the moderators. The study is of the view that to reduce the potential biases

in the research, the primary sources of biases in qualitative research should be discussed. It is worth mentioning here that the human element of the research process was emphasized.

Respondent Bias

Acquiescence bias: This is also called yes-saying and friendliness bias. This occurs when the respondents in their response demonstrates the tendency to agree with the researcher. In other words, the respondents agree with the questions poses by the researcher. Sarniak (2015) emphasized that the researcher should reduce this bias by using different question styles and such will get the respondents true perspectives on the subject matter.

Social desirability bias: This is when the respondents provide answers to the questions asked in a way that they perceived the researcher will accept and like. Sarniak (2015) emphasized that regardless of the way the questions are asked, the respondents may give an inaccurate answer based on their opinions but on what the researcher want to achieve. This research used indirect questions because these allows the respondents to project their own feelings as honestly and truthfully which will ensure that the incident of social desired biases is reduced.

Habituation: This occurs when the respondents provide similar answers to similar questions. This research adopted three different questioning style. These varies the questions wording and does not make them habitual in nature. This reduced the impact of habituation bias from this research.

Sponsor bias: This occurs when the respondents know the researcher's feelings and opinions, they will provide responses to suit the researcher's perspective. The respondents answer the questions based on the researchers' core beliefs. This research maintained a neutral stance and ensure that the interference is not possible because the questionnaire was distributed online, and the researcher does not know who the respondents were.

Having critically examined the sources of biases from the respondents' perspective, the next section examined the potential biases from the researcher. This can affect the reliability of the finding.

The confirmation bias: This occurs when the researcher forms an opinion based on the responses from the participants perspective and use the responses to confirm their hypothesis or belief. However, the researcher takes the part of the responses that answers their research objectives and ignores the parts that does not agree with their perspective.

Sarniak (2015) emphasized that the researcher must continually re-evaluate the respondent's impressions to correct any pre-existing assumptions and ideas that could create the bias. This will enable respondents to give truthful responses.

Question-order bias: This occurs when the respondents answer to one question can influence the other question and as a consequent, it can lead to question-order bias. This is because the wording and ideas of the questions are similar and thus influenced the thoughts, feelings and attitudes of the respondents. Sarniak (2015) emphasized that the question-order bias can be corrected by asking general questions before specific, unaided before aided and positive but negative. This process was adopted in the questioning style in this research.

Having critically examined the potential biases in the qualitative research, the research is confident that the potential biases are reduced to the barest minimum. The next section presented the analyses of data set from the questionnaire and it was used to answer research five.

7.13 Data Analysis

A total of 37 responses were received from the online survey and based on these responses, the perception of participations' in the mortgage finance market was analysed.

The questionnaire is divided into six sections namely: bio data, cultural related matters, organisational specific issues, operational related matter, mortgage market constraints. The perceptions of the participants were discussed according to these sections.

7.13.1 Critical Discussion of Bio Data Section.

The section gathered information about the respondents and based on the information gathered, this research will judge their perception. The information was age of the respondents, academic qualification, job function and years of experience. The questions were from 1 to 4 on the questionnaire.

Based on the survey, the following were obtained.

Table 7.54 Survey Bio data summary

1	Age Range	21-30	31-40	41-50	51-60	60+
	Percentage	2.7	59.5	21.6	16.2	0
2	Academic Qualification	Others	SSCE	BSc/BA	MSc/MA	PhD
	Percentage	2.7	0	16.2	54.1	27
3	Job Function	Risk Mgt	Credit	Compliance	Legal	Audit
	Percentage	16.2	24.3	35.1	10.8	13.5
4	Years of Experience	1 to 10	11 to 15	16 to 20	21 to 25	25 and Above
	Percentage	13.5	37.8	32.4	10.8	5.4

The results from the above survey revealed the followings:

Firstly, 97.3% of the respondents were above the age of thirty and this research can judge that most of the respondents have the maturity to the sensitive nature of the survey.

Secondly, 97.3% of the respondents have at least a bachelor's degree. It should be noted that 54.1% have master's degree qualifications.

Thirdly, the survey responses were evenly distributed across the key job functions that are involved in the management and disbursement of mortgage finance in banks.

Fourthly, the respondents are very knowledgeable and experienced about the activities in the mortgage market.

This research is of the view that the perception of the respondents can be argued to be accurate and reliable based on the age, academic qualification, job function and years of experiences in banking.

Additionally, it is worth recognising that the data underpinning all analysis in this section are based on the perceptions/opinions of those who participated in this research data, gathering the online designed and administered questionnaire. The philosophical stance for this research, as discussed in Chapter 6, of which the epistemological position is methodological triangulation, where positivism and realism are complemented by interpretivism.

7.13.2 Critical Discussion of section B (Cultural related matters)

This section gathered information on cultural related matters that could impact on the development of the mortgage market. The perception of the respondents was used to determine if the cultural issues such are poor saving culture, lack of credit culture, customers unwillingness to give vital information and lack of debt repayment culture can affect the development of the mortgage market. The questions were from 5 to 8 on the questionnaire.

Table 7.55 Survey on cultural related issues summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
5	Poor saving culture	10.80%	5.40%	2.70%	13.50%	67.60%
6	Lack of credit culture	2.70%	2.70%	8.10%	18.90%	67.60%
7	Unwillingness of customers to give vital information	5.40%	5.40%	5.40%	24.30%	59.50%
8	Lack of debt repayment culture	2.70%	5.40%	8.10%	18.90%	64.90%

This research used the above questions to understand the perception of senior bankers and loan managers on the cultural related issues in the Nigeria mortgage market. The results of the survey revealed that cultural related issues are instrumental to the strictness of the supply of mortgage finance in the mortgage market. From the survey, the 81.1% of the respondents are of the opinion that poor saving culture is limiting the access of households to mortgage finance. In addition, lack of credit culture, unwillingness of customers to give vital information, and lack of debt repayment culture agreed with over 80 % to be cultural related factors affecting the mortgage market.

7.13.3 Critical Discussion of section C (Organisational specific Issues)

The section gathered information on the organisational specific issues such as the institutional perspective to mortgage lending, the use of computer and automation in the daily operations of the Bank, types of mortgage products and their target market, different means of creating awareness/advice to the customers on how to finance their desired property. This research investigated the impact of the organisational specific issues on the ability of banks to supply funds needed in the mortgage market. The questions were from 9 to 14 on the questionnaire.

Table 7.56 Survey on organisational specific issues summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
9	Poor computer automation of loan management processes.	0%	8.10%	8.10%	16.20%	67.60%
10	Few types of mortgage products.	0%	13.50%	5.40%	13.50%	67.60%
11	Mortgage products are satisfactory to various segments of the market.	16.20%	18.90%	2.70%	2.70%	59.50%
12	Inability of Banks to create awareness/advice the customers on mortgage finance.	0%	0%	0%	32.40%	67.60%
13	Bureaucratic issues in loan approval processes.	0%	5.40%	0.00%	10.80%	83.80%
14	The bank branches systems are connected.	2.70%	13.50%	5.40%	21.60%	56.80%

This research used the above questions to understand the perception of senior bankers and loan managers on the organisational specific issues in the Nigeria mortgage market. The results above revealed that organisational specific issues identified are instrumental to the strictness of the supply of mortgage finance and the ability of banks to grant the finance needed in the mortgage market. From the survey, the 83.8% of the respondents are of the opinion that poor computer automation of loan processes is limiting the access of households to mortgage finance. In addition, all the respondents totally agreed that banks inability to create awareness/advice the customers on mortgage finance limited the development of the mortgage market. The survey further revealed that 81.1% of the respondents agreed that few mortgage products available, which restrict the options available for the customers to choose from. Bureaucratic loan approval processes and bank branch system connection were used to capture the organisational specific issues limiting the effectiveness of the banks' ability to supply the funds needed in the mortgage market.

Cross Tab (Job Function vs Mortgage products are satisfactory to various segments of the market)

A critical review for further evidence using cross tabulation of the respondents' job function on the question (Mortgage products are satisfactory to various segments of the market). The

result from the cross tabulation revealed below.

Table 7.57 Cross Tab (Job Function Vs Mortgage products are satisfactory to various segments of the market)

| | Job Function | | | | | Totals |
	Risk Management	Credit	Compliance	Legal	Audit	
1 = Strongly disagree	1	1	1	2	1	6
2 = Disagree	0	3	2	0	2	7
3 = Neither agree nor disagree	0	0	0	0	1	1
4 = Agree	0	0	1	0	0	1
5 = Strongly agree	5	5	9	2	1	22
Totals	6	9	13	4	5	37

Further to the result obtained in Table 7.57, a critical review of how the respondents' job function influenced their perception, it revealed that more respondents from the compliance background strongly agreed that their mortgage products are satisfactory to various segments of the market. However, based on the above results, this research is of the view that the job functions that are customer facing such as credit and compliance are, disagreed with others that mortgage products are satisfactory to all segment of the market. This is because the customer facing bank staffs have a general overview of the customer segment in term of the financial capacity, income and attitude to mortgage products. The perception of respondents in credit and compliance job role is valid but it does not over-ride the general agreed perspective that strongly agreed that mortgage products are satisfactory to various segments of the market.

Cross Tab (Job Functions Vs The bank branches systems are connected)

A critical review for further evidence using cross tabulation of the respondents' job function on the question (The bank branches systems are connected). The result from the cross tabulation revealed below.

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Table 7.58 Cross Tab (Job Functions Vs Bank branches are connected)

	Job Function					Totals
	Risk Management	Credit	Compliance	Legal	Audit	
1 = Strongly disagree	0	0	1	0	0	1
2 = Disagree	0	2	1	1	1	5
3 = Neither agree nor disagree	0	0	0	0	2	2
4 = Agree	1	1	3	1	2	8
5 = Strongly agree	5	6	8	2	0	21
Totals	6	9	13	4	5	37

Further to the result obtained in Table 56, a critical review of how the respondents' job function influenced their perception, it revealed that 22% of the respondents did not agree the branches systems are connected and these feelings are mainly from respondents in credit, compliance, legal and audit job functions. It is worth mentioning that no one in audit strongly agreed that bank branches are connected. This research can deduce that the location of the respondents could have influenced their feeling. This is because bank branches are better connected in urban centres than rural communities. However, this does not override the generally agreed perspective that bank branches are connected.

7.13.4   Critical Discussion of section D (Operational related matters)

The sections gathered information on operational related matters. This captures the impact of changes in interest rate charged by banks and the percentage of total loan in the mortgage market. Furthermore, the access to national housing fund (NHF) and the supposed secondary finance mechanism put in place by the government. The ability of banks to recover loan defaulted and foreclosure enforcement. This research investigates the impact of the operational related matter on the ability of banks to supply funds needed in the mortgage market. The questions were from 15 to 20 on the questionnaire.

Table 7.59 Survey on operational related matters summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
15	Underdevelopment of the secondary market	0%	2.70%	2.70%	18.90%	75.70%
16	Lack of access to national housing funds	0%	0%	0%	21.60%	78.40%
17	Inability to recover easily loan defaulted and foreclosure enforcement.	0%	0%	0%	13.50%	86.50%
18	Low level of mortgage account holders	2.7%	0%	0%	18.90%	78.40%
19	Lack of domiciliation of salaries to the banks	0%	10.80%	8.1%	13.50%	67.60%
20	High mortgage interest rate charged	2.70%	0%	5.40%	8.10%	83.80%

Based on the above survey results, it revealed that the respondent's opinion is that operational related matters are limiting factors affecting the supply of funds in the mortgage market and thus, the development of the market. The results evidenced it that by over 80% that the underdevelopment of the secondary market, lack of access to national housing funds, inability to recover easily loan defaulted and foreclosure enforcement, low level of mortgage account holders, lack of domiciliation of salaries and high mortgage interest rate charged are operational related factors limiting the supply of funds and the development of the mortgage market.

Furthermore, the results evidenced that there is weak institutional framework in Nigeria. For instance, the cumbersome legal system which take long period for banks to recover loan defaulted and enforce foreclosure.

7.13.5   Critical Discussion of section E (Mortgage market Constraints)

This section gathered information on the identified constraints in the mortgage market. These constraints are divided into macroeconomic challenges, policy and regulatory challenges, institutional challenges, financial sectors challenges and the housing sector challenges. The perception of the senior bankers and loan managers were used to access the performance and development of the mortgage market in term of provision of affordable housing for the citizenry.

7.13.5.1 Macroeconomic Challenges

This section gathered information on the impact of macroeconomic challenges on the development of the mortgage market. It is of the view that a robust macroeconomic environment should improve the performance of the mortgage market to provide the needed affordable housing. The questions were from 21 to 24 on the questionnaire.

Table 7.60 Survey on macroeconomic challenges summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
21	High inflation rate	0%	2.70%	0%	16.20%	81.10%
22	High interest rate	0%	2.7%	0%	8.10%	89.20%
23	High volatility of crude oil price	2.7	5.4%	8.1%	8.1%	75.70%
24	Slow growth in GDP	0%	2.7%	5.4%	16.20%	75.70%

The survey results above, revealed that the respondent's opinion is that macroeconomic challenges such as high inflation rate, high interest rate, high volatility of crude oil and slow growth in GDP are limiting factors affecting the supply of funds in the mortgage market and thus, the development of the market. This was based on the argument that Nigeria is a mono-cultural economy and the oil revenue drives growth in the economy. However, when there is volatility in the oil market, the macroeconomy experiences the shocks which in turn affect the ability of banks to grant the long term funds needed in the mortgage market. Furthermore, bank charge more above the already high interest rate and inflation rate which exclude many households that cannot meet the affordability criteria set by banks.

It is worth mentioning this finding, conform with the quantitative aspect (research question four) of this study.

Cross Tab (Job Function Vs High volatility of crude oil price)

A critical review for further evidence using cross tabulation of the respondents' job function on the question (High volatility of crude oil price). The result from the cross tabulation are revealed below.

Table 7.61 Cross Tab (Job Functions Vs High volatility of crude oil price)

	Job Function					Totals
	Risk Management	Credit	Compliance	Legal	Audit	
1 = Strongly disagree	0	1	0	0	0	1
2 = Disagree	0	1	1	0	0	2
3 = Neither agree nor disagree	0	1	1	0	1	3
4 = Agree	0	1	0	0	2	3
5 = Strongly agree	6	5	11	4	2	28
Totals	6	9	13	4	5	37

Further to the result obtained in Table 60, a critical review of how the respondents' job function influenced their perception, it revealed that 16% of the respondents did not agree that there is high volatility of crude oil price and these feelings are mainly from respondents in credit and compliance job functions. This is because the customer facing bank staffs have a general overview of the customer segment in term of the financial capacity, income and attitude to mortgage products when there is volatility of crude oil. The perception of respondents in credit and compliance job role is valid but it does not override the general agreed perspective that strongly agreed that macroeconomic determinants are significant influence on the performance of the mortgage market.

7.13.5.2 Policy and regulatory challenges

This section gathered information on the impact of the policy and regulatory challenges on the development of the mortgage market. This research is of the view that effective policies formulation, implementation and constant review to check for impact analysis is a necessary condition for improving the performance of the mortgage market to provide the needed affordable housing. Having critically investigated and analysed housing policy and regulations in Nigeria over time, the following were asked to gather the opinion of senior bankers and loan managers. The questions were from 25 to 28 on the questionnaire.

Table 7.63 Survey on policy and regulatory challenges summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
25	Difficulty in processing consent for transfers and title deeds	0%	0%	5.4%	18.90%	75.70%
26	High cost of processing consent for transfers and title deeds	0%	2.7%	0%	21.60%	75.70%
27	Continuous use of the land use act of 1978	0%	5.4%	2.7%	21.6%	70.30%
28	Ineffectiveness of the housing policies	0%	0%	0%	24.30%	75.70%

The survey results of policy and regulatory challenges based on the respondents opinion on the policies and regulations in Nigeria on the development of the mortgage market revealed that difficulty in processing consent for transfers and title deeds, high cost of processing consent for transfers and title deeds, continuous use of the land use act 1978 and ineffectiveness of the housing policies are limiting factors affecting the development of the mortgage market. Furthermore, the results emphasized that access to mortgage finance is not possible due to difficult of obtaining title deeds and transfer of land in Nigeria. High cost of processing will further add to the cost of buying a property which will make it out of the reach of the household. The continuous use of land use act of 1978 has limited the development of the mortgage market. This is because based on the land use act, government owes the land and can take the land for its use anytime, this stalls the development of the mortgage market because financial institutions particularly banks will not be willing to supply funds to buy a property where the lands are on government acquisition scheme.

7.13.5.3 Institutional Challenges

The roles institutions play in the mortgage market is key to its performance. A robust institutional framework will deliver an effective and efficient mortgage market that will provide adequate access to households to buy their desired properties. The section gathered information on the institutional structure in Nigeria and its impact on the mortgage market. This section considered the roles of the insurance practice, political environment/religion situation, bank recapitalization and corruption. The questions were from 29 to 32 on the questionnaire.

Table 7.64 Survey on institutional challenges summary

		Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
29	Poor state of insurance practice	0%	0%	5.4%	24.30%	70.30%
30	Political unrest and religious crises	0%	10.80%	2.70%	10.80%	75.70%
31	Bank recapitalization exercise of 2005	0%	13.50%	10.80%	10.80%	64.90%
32	High level of corruption	0%	8.10%	0	10.80%	81.10%

The results of the survey of the institutional issues revealed that institutional challenges are limiting factors impeding the development of the mortgage market. Over 80% of the respondent's opinions revealed that poor state of insurance practice, political unrest and religious crises, bank recapitalization exercise and high level of corruption are impeding the development of the mortgage market.

7.13.5.4 Financial Sector challenges

The section gathered qualitative information from the financial sector and how it impacts on the development of the mortgage market. The Nigeria financial sector is still developing and as an emerging economy, it has peculiar challenges and financial depth has been argued not deep enough to effectively supply the funds (mortgage finance) in the mortgage market. This section used ranking method to identify from the respondents the significance of the identified financial sector challenges.

Table 7.65 Survey on financial sector challenges summary

	Financial Sector Challenges	Very significant						Less Significant
	Ranking	1	2	3	4	5	6	7
33	Absence of credit rating agency	78.40%	8.10%	0%	5.40%	0%	0%	10.80%
34	Ignorance of national housing funds	78.40%	13.50%	2.70%	2.70%	2.70%	0%	0%
35	Absence of secondary market	78.40%	8.10%	5.40%	5.40%	0.00%	0%	2.70%
36	Restricted access to funds by Primary Mortgage Institution	78.40%	13.50%	0%	5.40%	0%	0%	2.70%
37	High down payment requirement	81.10%	8.10%	5.40%	2.70%	0%	0%	2.70%
38	Lack of development of liquidity facilities framework to refinance mortgage assets.	78.40%	13.50%	2.70%	0.00%	2.70%	0%	2.70%
39	Poor corporate governance compliance	78.40%	5.40%	0%	5.40%	0%	0%	10.80%

Based on the above survey results, all the respondents agreed that the financial sector challenges identified are very significant factors affecting the development of the mortgage market. The results obtained evidenced it that the absence of credit rating agency in Nigeria to determine the credit worthiness of households is a critical constraint of banks to grant mortgage loan to buy their desired properties. And as a consequent, bank demand high down payments (which 78.40% respondents agreed that it's a problem), thus reduce the affordability criteria, impacting the mortgage market. Over 78% of the respondents agreed that to develop the mortgage market, there should be credit rating agency. Furthermore, the respondents agreed overwhelmingly that underutilization of national housing funds, absence of secondary market, ineffectiveness of the PMIs, poor corporate governance and lack of refinance of mortgage assets framework are significant problems of the financial sector in Nigeria.

7.13.5.5 Housing sector challenges
The section gathered information on the housing sector challenges from perception of senior bankers and loan managers. This was used to gather evidence on how the challenges impacted on the development of the mortgage market. The Nigeria housing sector challenges have peculiar characteristics which directly impact on the mortgage market. This section used

ranking method to identify from the respondents the significance of the identified financial sector challenges.

Table 7.66 Survey on housing sector challenges summary

	Housing Sector Challenges	Very significant					Less Significant
	Ranking	1	2	3	4	5	6
40	Low income level of average Nigerians	89.20%	5.40%	2.70%	2.70%	0.00%	0.00%
41	High cost of construction	91.90%	2.70%	0.00%	5.40%	0.00%	0.00%
42	High level of unemployment and irregular income	91.90%	2.70%	5.40%	0.00%	0.00%	0.00%
43	Stringent condition for accessing funds	91.90%	5.40%	2.70%	0.00%	0.00%	0.00%
44	Distrust of banks and financial institutions	73%	8.10%	10.80%	5.40%	0.00%	2.70%
45	Location and distance of banks	64.90%	5.40%	2.70%	2.70%	5.40%	18.90%

According to the survey, households' access to mortgage finance is mainly constrained by low income level of average Nigerians, high level of unemployment and irregular income, high cost of construction which was made worse by the devaluation of the naira, consequently expensive building materials. In addition, stringent lending and assessment conditions which was further evidenced by the households' distrust of banks and financial institutions coupled with the location and distance of banks particularly in the rural areas.

7.14   Questions 46 and 47

The section further enabled the respondents to express their opinion based on their experiences on the main constraints and limiting factors affecting the development of the mortgage finance market in Nigeria and identified what can be done to improve the market to provide affordable housing for the Nigeria households.

The participants perspectives were used to validate and check the reliability of the responses above by asking the respondents to give their perspective on major constraints affecting the mortgage market and, in their opinion, proffer the possible recommendations on ways to improve the development of the mortgage market.

This section is divided into two parts, the first part summarised the coding and explanations, explains the data analysis, and reports the findings. The second part discusses the findings

and compare the results of the quantitative aspects of the research to triangulate and synthesise the findings of the research.

Findings

This section explains the process of analysing the data generated from the questionnaire (questions 46 and 47). A summary of individual responses which was aggregated in each code is given below.

Coding

An inductive coding technique was used as against the deductive coding technique. The inductive coding technique is bottom-up approach where codes are derived from the data. In this instance, the codes are derived from the written responses from the respondents. The codes are built and modified throughout the coding processes. This bring open mind and leads to precise themes being are suggested empirically from the data (Seale 2012, P 368).

 A deductive coding technique is where the researcher formulates pre-set coding schemes. These codes emerged from literature review and reports. The researcher's setup the codes and the definition prior to the data collection (Seale 2012, P 368).

Having identified the inductive coding approach, the data were generated from the questionnaire questions 46 and 47. Codes were generated as they emerged from the participants responses. A total 22 codes were generated from the participants responses and they were further reviewed and merged based on similarities in terms of meaning and classifications.

Finally, a summary of the coding structure is presented in the tables below. The first column on the table shows the code number, the second column is the summary of the responses and the third column is codes.

Table 7.67   **Summary of coding structure for Question 46**

Code number	Codes	Response Description	Code Identified
1	Low Income, irregular income, affordability index, high down payment- expensive properties, strict lending conditions	Household Income	Economic Constraints
2	High poverty	Poverty	Economic Constraints
3	Macroeconomic issues such as High Inflation, slow growth in the economy, High unemployment, volatility of the oil market	Macro economy issue	Economic Constraints
4	Corruption	Corruption	Financial Constraints
5	Difficult legal regulatory	Legal Issues	Financial Constraints
6	Financial Issues such as High borrowing rate, short repayment period, Unwillingness of banks to grant mortgage finance, Lack of a secondary market for mortgage instruments, Lack of financial depth, lack of banking culture.	Financial Issues	Financial Constraints
7	Bad policy formulation and implementation	Policy	Political Constraints
8	Terrorism, Political Instability, Religious crisis	Political Issue	Political Constraints
9	Lack of political will	Political Affiliation	Political Constraints
10	Not sophisticated	Embracing Technology	Others
11	Lack of experienced developer	Skillset Issue	Others
12	Lack of awareness	Awareness	Others

Table 7.68   Summary of the Responses

Code number	Response Description	Number	Percent
1	Household Income	16	23.19
2	Poverty	5	7.25
3	Macro-economy issues	14	20.29
4	Corruption	6	8.7
5	Legal Issues	3	4.35
6	Financial Issues	8	11.59
7	Political Issues	6	8.7
8	Policy	5	7.25
9	Political Affiliation	3	4.35
10	Skillset Issue	1	1.45
11	Embracing Technology	1	1.45
12	Awareness	1	1.45
		69	**100**

7.15   Analysis of Data

This section critically discussed the responses of participants in questions 46. In order to effectively identify and discuss the constraints and solutions from the participants above, the responses were coded and classified into three categories, which are economic, financial and political. The discussion here was centred on these.

Discussion of responses from senior banker and loan managers of question 46

Economic constraints

Low Income, irregular income, affordability index, high down payment- expensive properties, strict lending conditions.

Based on the survey, 23% of the respondents identified low income of households as the main problem affecting the mortgage market in Nigeria. This finding conforms with other studies such as (Tunstall et al (2013). This is consequent of the high unemployment rate in Nigeria, currently 43 % (NBS, 2019). Similarly, due to the instability in the price oil, such volatility has dwindled the revenue of government and government being the highest employer of labour, this resulted in irregular income for those employed by the government and this does affect the economy and the mortgage market. Due to the low and irregular income, affordability index is low and coupled with the high down payment and strict lending conditions, the development of the mortgage market is significantly affected.

High poverty

In an economy where there is high poverty rate, it will be difficult to develop the mortgage market. This is because high poverty means that average households cannot afford the basic necessities of life and shelter is one of the important necessities. About 8 % of the respondents emphasized that high poverty in Nigeria is the bane of the mortgage market particularly in the north east and north west regions in Nigeria. Tunstall et al (2013) found out that there is a direct link between poverty and the performance of the mortgage market.

Macroeconomic issues such as High Inflation, slow growth in the economy, High unemployment, volatility of the oil market.

The studies of Panagiotidis and Printzis (2015) established that there is a positive relationship between a robust macroeconomy and the mortgage market. This research emphasized that an economy with high inflation, slow growth, high unemployment and volatility of the oil market cannot support the development of the mortgage market. About 21% of the respondents emphasized that poor macroeconomy situation is responsible for slow development of the Nigeria mortgage market. This research is of the view that a stable macroeconomy where there is low inflation, rapid economic

growth, low unemployment and stable crude oil prices will have a significant impact on the development of the mortgage market. This is because banks, investors and households will be active in the mortgage market where the macroeconomy is stable. Furthermore, as inflation and mortgage interest rate decline, the mortgage market develops. This is because affordability index improves, where banks can lend more, and the economy developed due to the boost in the housing market.

Financial Constraints

Corruption

Corruption is a big problem in Nigeria. Using the corruption perception index, Nigeria is classified amongst the most corrupt countries in the world. Corruption is simply not following the procedure. About 9% of the respondent are of the opinion that the high level of corruption across the Nigeria economy the financial market is a significant factor responsible for underdevelopment of the mortgage market. This evidenced where the contributory funds warehoused in the financial system are used for the purpose it is meant for. These funds are compulsory monthly workers contribution towards the purchase of their properties which are deducted from their account, but which access to the funds are denied.

Difficult legal regulation

Unfavourable legislation particularly the difficult legal regulation in the perfection or acquisition of land in Nigeria. In Nigeria, the procedure for registering a property in Nigeria are 16 stages and 180 days (World Bank, Doing business data, 2019). The respondents believed that this process is affecting the development of the mortgage market. This is because it will take 180 days to register a property and without such registration, the bank will not approve the mortgage loan.

Financial Institution Issues

The main financial Issues identified from the survey are High borrowing rate, short repayment period, Unwillingness of banks to grant mortgage finance, Lack of a secondary market for mortgage instruments, Lack of financial depth, lack of banking culture. A total of 12% of the respondents emphasized these problems are the main issues affecting the development of the mortgage market This finding here is emphasized in Bello and Adewusi (2009).

It was also emphasized that the short repayment period of mortgages in Nigeria is one of the reasons for the slow development of the mortgage market. This is because in Nigeria, mortgages are for a period of five years coupled with the ridiculously high down payments. The average workers cannot

meet up the terms set by the financial institutions except through corrupt means. Furthermore, the short-term nature of the financial institutions in Nigeria has contributed to the shallow financial depth where banks can not lend for a long tenure for loans like mortgages.

Political Constraints

Bad policy formulation and implementation

Based on the survey, about 8% of the respondents argued that bad policy formulation and its implementation is the bane of the mortgage market in Nigeria. Lack of consultation with the stakeholders before the government draws up a housing policy which does not deliver on its objectives has contributed to the housing deficits in Nigeria. Chiquier and Lea (2009) study emphasized that bad policies are the bane of the mortgage market in emerging market.

Terrorism, Political Instability, Religious crisis

The increase rate of terrorist attacks on infrastructure, lives and properties has significantly affected the development of the mortgage market particularly in the Northern part of Nigeria. Based on the survey, about 9 % of the respondents emphasized that terrorism linked to religious crisis has crippled the mortgage market in Nigeria. This is because there is no financial institution that will want to lend to buy properties in the part of Nigeria where there are such problems. Furthermore, this can be attributed to political instability caused by the religious crisis.

Lack of political will

The role of government is critical to the development of the mortgage market. About 5% of the respondents argued that there is lack of political will to develop the mortgage market in Nigeria. This is because there is no political ideology in Nigeria which support housing development and mass housing for the low-income households. The government unwillingness to provide affordable accommodation and very high corruption in government evidenced the lack of political will.

Other Constraints

Not embracing technology

The lack of sophistication where financial institution does not embrace technology in the management and delivery of their financial services to the customers. This is in term of process management, loan approvals, disbursements and monitoring has been identified as a problem affecting the efficiency and development of mortgage finance market in Nigeria. The respondents emphasized that financial institutions particularly banks did not embrace technology which will translate the quick loan

approvals and verification. The administrative bottlenecks are critical problem. Fuster et al (2018) emphasized the role of technology in mortgage market particularly mortgage lending.

Lack of experienced home developer

Local developers look for ways to cut corners and do not take the time to ensure all necessary financial elements are in place. Hence, the end results are substandard constructions with huge cost overruns. This is because the planning authorities are not always up to their responsibilities, where corruption is very high. Such substandard constructions cannot be used to obtain mortgage finance through the financial Institution.

Lack of awareness

The lack of awareness of the benefits of the mortgage market has been attributed to the slow rate of its development. The government and financial Institutions have not created awareness on the mortgage market products that households could benefit from. This is because the services that mortgage banks offer would help to improve their growth of the mortgage market.

7.16   Discussion of responses from senior banker and loan managers of question 47

The section discussed the solution to the problems identified from the perspective of senior bankers and loan managers on the mortgage market in Nigeria. The responses of the participants are coded into three blocks, which are economic, financial and political solutions.

Table 7.69   **Summary of coding structure for Question 47**

Code number	Codes	Response Description	Code Description
1	Increase in minimum wage, stable income, stable economy, Economic growth, creation of employment.	Economy growth and stability	Economic Solution
2	Open the economy to private sector participation, Diversification of the economy, embrace foreign direct investment, Private sector participation to low and affordable housing units.	Economy openness	Economic Solution
3	Government Investment, Time Investment, social housing and Infrastructures.	Government Investment and Infrastructures	Financial Solution
4	Relax lending conditions, Low Interest rate on loans and bank charges.	Lending Conditions	Financial Solution
5	Develop the secondary market	Secondary market	Financial Solution
6	Creating public awareness	Public Awareness	Financial Solution
7	Access to cheap finance for the low-income household, Improve standard of living.	Cheap Finance	Financial Solution
8	Central bank to create special scheme that will encourage lending.	Special Programme	Financial Solution
9	Favourable government policies, consultation of policies formulation, Review of mortgage policy.	Policy Review and formulation	Political Solution
10	Improve legal framework	Legal Framework	Political Solution
11	Political stability, political will	Political Stability	Political Solution
12	Improve the security situation	Security	Political Solution
13	Institutional framework- eliminate corruption	Institutional Framework	Political Solution

Table 7.70   Summary of findings

Code number	Response Description	Number	Percent
1	Economic growth and stability	7	23.33
2	Economy openness	3	10.00
3	Government Investment and Infrastructure	2	6.67
4	Lending conditions	1	3.33
5	Secondary market	1	3.33
6	Public awareness	3	10.00
7	Cheap finance	1	3.33
8	Special programme	2	6.67
9	Policy review and formulation	4	13.33
10	Legal Framework	1	3.33
11	Political stability	3	10
12	Security	1	3.33
13	Institutional Framework	1	3.33
		30	100

Economic solutions

Economic growth and stability

About 24% of the senior bankers and loan managers from the survey responded that economic buoyancy is the critical factor to improve the performance of the mortgage market. As part of the economic solution is to increase the minimum wage which is currently very low.

Furthermore, the stable income and salaries for the workers in the economy. The current situation is that more workers are being owed salaries over periods of twelve months and such a situation can not translate the robust economy that support the mortgage market. Tunstall et al (2013) found out there is a direct link between stable income and ability of the households to obtain mortgages.

And finally, creation of employment that are sustainable employment particularly in the informal sector of the Nigeria economy which has over 75% of the working population. The argument above emphasized that a robust economy should boast the performance of the mortgage market.

Economy openness

To create a vibrant economy, such an economy should allow an active participation of the private sector. The private sector involvement should diversify the economy. This is very important in an economy like Nigeria which is mono-cultural in nature. About 10% of the respondents believed that opening the economy will embrace foreign direct investment, which is needed in the mortgage market particularly where the private sector participates in providing low and affordable housing units.

Financial Solutions

Government Investment and Infrastructures

Good infrastructural development will aid the development of the mortgage market. The senior bankers and loan manager emphasized that government investment in infrastructures and active

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participations of the private sector will go a long way to the development and improvement of the mortgage market. About 7 % of the respondents believe that investment in infrastructure will bring about the needed boast in the mortgage market. This is confirmed in Chiquier and Lea (2009).

Lending Conditions

The strict lending conditions by financial institutions particularly banks in Nigeria. The senior bankers and loan managers believed that if the lending conditions are more favourable, the mortgage market will develop in Nigeria. About 4% of the respondents emphasized that relaxing the lending conditions coupled with low interest rate on mortgage loans and bank charges will bring about the boast of the mortgage market.

Secondary Market

The role of a developed secondary market is very important for a developed mortgage market. This is because a well-developed secondary market to enhances the financial depth of an economy and as a consequent, the financial market should be able to support the long-term finance like the mortgage finance. About 4% of the senior bankers and loan managers believe that the development and deepen of the secondary market is a panacea for the underdevelopment of the Nigeria mortgage market.

Public Awareness

The Nigerian public particularly in the rural areas are not aware of the services and products the financial institution provides and how they could benefit from such services and products. If the banks create the awareness, then the mortgage market services will improve. About 10% of the respondents believe that banks can do more by providing public awareness of their services and products.

Cheap Finance

The high interest rate and inflation rate has directly influenced the mortgage interest rate. High down payment has made access to cheap finances to buy household's desired properties. Nigeria housing market is mainly for the middle- and high-income households while there is no provision for low income household. About 4% of the respondents believed that access to cheap finance for the low-income household will develop the mortgage market in Nigeria.

Special Programme

About 7 % of the senior bankers and loan managers believed that there should be special programme to tackle the access to mortgage finance in Nigeria. Such programme will target the low-income households which are currently excluded from the mortgage finance. For instance, the help to buy scheme where the households need to provide only 5% of the value of the property, the government will provided an interest fee loan of 25% which will make up the 30% of the down payment requirement. This programme will solve the problem of down payment which has excluded a lot of households in Nigeria.

Political Solutions

Policy review and formulation

About 14 % of the senior bankers and loan managers advocated that the current housing policy should be reviewed. The new policy should provide a conducive operational environment for financial institutions particularly banks which will encourage the active participation in the mortgage market. The respondents suggested that there should be an overhauling of the housing policy particularly in term of regulation of the market between the practitioners and regulators. The formulation of the policy should be consulted with the stakeholders to have a policy suitable for the Nigerian housing market. Tunstall et al (2013) emphasized that a robust housing policy will boast the development of the mortgage market.

Legal Framework

The respondents believed that there should be a complete change in the legal framework currently being used in Nigeria. The respondents suggested that legal requirements such as transfer of title and legal mortgages, confirmation of title documents and uniformity of mortgage loan origination procedure should be similar across the financial institutions in Nigeria. The respondents emphasized that the land law and other laws relating to mortgage finances such as foreclosure laws, securitization law, land use act, repossession laws and contract laws should be revisited. About 4% of the respondents believed that if there is legal framework in place, the mortgage market will develop.

Political Stability

A stable political atmosphere is a sine quo non for the mortgage market. Where there is political stability, the mortgage market will develop. This is because both domestic and foreign investors can only invest fund where there is a political situation. Nigeria political atmosphere has been stable since 1999 and the 10 % of the respondents believed that political stability in Nigeria will enhance the development of the mortgage market.

Security

About 4 % of the respondents believed that improvement of the security situation in Nigeria particularly in north-west and north-east region will enhance the development of mortgage market. This is because financial institution particularly banks will not lend to regions where there is insecurity.

Institutional Framework

The senior banks and loan managers emphasized that institutional framework that can tackle corruption in Nigeria should be revisited. Corruption is a big problem in Nigeria which is affecting the operational, effectiveness and efficiency of the mortgage market. Where there is institutional framework in place, the mortgage market will develop.

Furthermore, establishing an institution to verify customers information regarding their credit history, income level, capacity to pay, collateral adequacy and other customer information will go a long way to develop the mortgage market. This is confirmed in Nwogugu (2011).

In summary, this research had successfully answered the five research questions which it set to achieve. This section provides a summary of the findings, compare the results obtained and bring out the unique contribution of this research and highlight areas of further research.

The first research question is to identify the constraints, determinants and limiting factor of demand for mortgage finance. This research found out that demand for housing and mortgage finance in Nigeria is influenced by the demographic factors such as number of persons living in the family household, family structure -more than two wives, sex, marital status, age. Other factors are location, geographical difference, level of education, infrastructural development such as electricity, water supply, industry where the household works and the household income.

The second research question which is to identify the constraints, determinants and limiting factors of demand for mortgage finance from north-south divide perspective. This research found out that there are significant differences in the constraints, determinants and limiting factors affect the demand for mortgage finance between north and south. Furthermore, the research found out that there are regional differences in the demand for mortgage finance in Nigeria where culture, religion, educational level, infrastructural development and prominent occupation are dominant in the region were also identified as influential factors.

The third research question is to investigate the influence of credit rationing on the demand for mortgage finance in Nigeria. This research found out that credit rationing ceased after the recapitalization exercise of 2005 in Nigeria and credit rationing returned during the period of the global financial crisis of 2007-2008.

The fourth research question critically investigated the role of financial institution particularly banks in the supply of the long-term funds needed in the mortgage market. This research found out that the ability of banks to supply the long-term funds needed in the mortgage market is determined by the bank-specific, industry, macroeconomic and institutional determinants.

The fifth research question was used to complement the above research questions. This critically investigate the perception of the senior bankers and loan managers on the problems of the mortgage market. The research found out that the perceptions of the senior bankers and loan managers aligns with the quantitative side of this research.

In the next chapter, this research will summarise the main findings of this study, state the contribution to knowledge and conclude the study.

8.0   Chapter 8: Summary and Conclusion

In chapter 8, this research study answered the five research questions. The aim of this chapter is to present the summary of this research, summary of the major conclusions, identify and discuss areas of further study, discuss the recommendations and contributions to knowledge.

8.1 Summary of main conclusions

This section presents a summary of the main conclusions of each of the chapters of this thesis.

Chapter one should give a general introduction to the study which consists of the background, aim and objectives of the research and more importantly the reasons for conducting the research were spelt out. The main limitations of the study were identified.

Chapter two examined the life cycle perspectives to the demand for housing and demand for mortgage finance. Extensive literatures were investigated, which looked at the household perspectives on the decision-making regarding housing consumption and thus, mortgage finance. This critically identified the similarity of the various models in literature from the life cycle theory perspective, identified the variables that were used in the study and the methods of estimation which formed the basis for the demand for mortgage finance model which was used in this study. The critical discussion of the theoretical perspective and empirical studies of the demand for mortgage finance was investigated, variables and methods used were further examined. A structured comparison of the models was done, similarities and differences were identified and based on this, a suitable model for this study was identified.

Chapter three examined the theoretical concept of rationing in the mortgage market. An extensive discussion on the various types of rationing in literature was done which are equilibrium rationing, disequilibrium rationing and dynamic rationing. The section highlighted the impact of asymmetric information/imperfect information in the household decision in the mortgage market. A theoretical and empirical evaluation of the relevant studies was carried out which highlighted the impact of rationing on the demand for mortgage finance.

Chapter four critically examined the supply side of the mortgage market (Supply of funds). A

brief historical perspective of the Nigeria financial system was done. This should lay the foundation for the discussion of roles of financial institution in the Mortgage market. The role of financial institutions was investigated with the aim of identifying the various constraints that affect the performance of the institutions in granting long-term credit needed in the mortgage market. The theoretical basis for lending was established and various theoretical and empirical models on both developed and emerging economies were reviewed. In conclusion, this section identified a suitable model which was explored to achieve this section objective.

Chapter five critically examined the Nigeria mortgage market. A brief look at the structure of the market was done which are the formal and informal sector. Sources of funds for the household in respect of housing consumption were extensively discussed. The various National developmental plans and housing policies were looked at. The aims, objectives, achievements and failures of the policies were examined, and identified the causal factors of the failure of the policies. The regional/sectional prevailing characteristics were identified and discussed. A review of the Macroeconomic challenges, Policy and regulatory challenges, Institutional challenges, financial sector challenges, Housing sector challenges with respect to the Nigerian mortgage market were done.

Chapter Six was based on the methodology of the study. It detailed the research approach, procedures, methods, specification of the model(s) and setting the apriori conditions for the variables. The section identified the various methods in research design which could be used in the research and based on the research questions, a suitable method will be identified. The relevant datasets were identified, and a detailed discussion of the variables were done and in conclusion, this section blended the theoretical perspectives discussed in the previous sections to answer the research questions. A mixed method was adopted.

Chapter Seven present the results of the empirical investigation of the research. This includes the findings of the empirical estimation of the models and qualitative aspect of this research. Furthermore, the findings from the econometrics investigation were linked to the theoretical perspectives. Based on the determinants, limiting factors and constraints militating the Nigeria mortgage market were identified and solutions to identified problems were discussed.

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8.2 Critical Evaluation of the Research Questions

This section provides a critical evaluation of the research questions in this research and summary of the findings.

The first research question: What are the drivers of demand for mortgage finance?

To answer the above, the research identified the principle of intertemporal substitution in **Chapter 2**, where households maximize their utility by trading-off the allocated resources between two periods that is the early years where the household is young with limited resources, borrows and pay back when they have more resources at the later years in their lifetime. This was grounded on the Keynes consumption model such as Keynes consumption model, Modigliani life cycle model and Friedman consumption model and Hall's random walk hypothesis. This formed the foundation for the estimation of the demand for mortgage finance.

Furthermore, as discussed in **Chapter 2**, advanced studies on the demand for mortgage finance such as Brueckner (1994a), Jones (1993, 1994, 1995), Follarin and Dunsky (1997), Dunsky and Follarin (2000), Leece (2006), Harrison et al (2004). These models emphasized that permanent life cycle income perspective and used empirical analysis to identify factors and determinants estimates for the demand for mortgage finance.

This research adopted the Ling and McGill (1998) demand for mortgage finance Model. The reasons for these are: aim of the paper aligned with the research aim, data availability (household level data), two stage model structure, emphasized disaggregation by age group, model adopted by other study such as Hutchison at el (2014).

Ling and McGill (1998) piece of work investigated the impact of household consumption, periodic income, non-housing wealth, household income tax position, expected mobility and other micro-level characteristic that influence household risk preferences and life cycle effects on demand for mortgage finance.

Based on the Ling and McGill model structure, this research explored a simultaneous equation model, which used mortgage demand equation and housing equation. Based on this, a household level data was used to estimate the mortgage demand and housing equation, which was used to identify and determine the factors, determinants and limiting factors affecting the demand for mortgage finance.

The empirical evidence presented in **Chapter 7** from the quantitative side of the study

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revealed that the simultaneous equation model was used on household level dataset and this research found out (s**ee Table 7.28 and 7.29**) that the demand for mortgage finance and demand for housing in the Nigeria context are influenced by family size, number of unrelated persons living in the household, number of wives/partners, location, geographical difference, infrastructures (electricity and water supply), marital status, wealth transfer, years of education, educational qualifications, industrial sector and household income as confirmed in Ling and McGill (1997), Meen and Andrew (2005), Hutchison et al (2014).

Research Question Two: What is the regional prevalence, characteristics and determinants of the mortgage market?

To answer this research question, this section built on the foundation in chapter 2 and 3 of the research. This research adopted a two-process approach **(see Chapter 6).** The first approach was to investigate if there are differences in the demand for mortgage finance and demand for housing in north and south parts of Nigeria. This is because of the multi-cultural and diverse ethnic community which can influence the household's consumption pattern in those parts of Nigeria. This section used the same Ling and McGill Model structure. A simultaneous equation model-mortgage demand equation and housing equation was adopted. Based on this, a household level data was used to estimate the mortgage demand and housing equation which was used to identify and determine the regional prevalence factors, determinants and limiting factors affecting the demand for mortgage finance.

The empirical investigation of the north vs south divide revealed **(see Tables 7.45 and 7.46)** that there are slight differences in the determinants, factors that influence the demand for housing and demand for mortgage finance in the northern and southern parts of Nigeria. However, despite the slight differences, determinants and factors were identified. The household income, level of education, marital status, industry, family size, age, geographical location and infrastructural facilities are important factors and determinants that can influence the demand for housing and consequently, demand for mortgage finance.

 Further empirical evidence revealed that geographical differences, availability of infrastructures such electricity and water supply does influence the demand for mortgage finance in the northern part of Nigeria and it is not the same for the southern part of Nigeria.

In the northern part of Nigeria, family size and marital status have been identified to influence

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the demand for mortgage finance. This emphasized the impact of religious believes in the Northern part of Nigeria where they are predominately Muslims. This is different in the southern part of Nigeria where there are smaller family size and as a consequent, demand for smaller room sizes.

The educational qualifications, years of schooling and literacy levels was higher in the northern part of Nigeria which should influence the demand for housing, however, relatively the household income is smaller compared to southern part of Nigeria. The southern part of Nigeria has a vibrate middle-income class which does drives the demand for housing and mortgage finance.

Nigeria is divided into six regions and it is divided along language, occupation, culture, ideology, religion and political association and affiliation lines. This research conducted investigation of factors that can influence the demand for mortgage finance in the six geo-political regions in Nigeria using household level dataset. A simultaneous equations modelling was used, and the results revealed the followings:

The research found out **(see Table 7.47 and 7.48)** that there are significant differences in the demand for mortgage finance and demand for housing in the six geo-political regions in Nigeria. The regional differences were prominent in the household income, level of education, marital status, industry, family size, family structure, age, geographical location and infrastructural facilities. These are important factors and determinants that can influence the demand for housing and consequently, demand for mortgage finance in the regions.

Furthermore, this research found out that the consumption pattern of households in the regions are influenced by the cultural differences identified. The research found out that there are peculiar cultural doctrines among the regions, which, influences the households demand for housing and mortgage finance. For instance, the Yoruba cultural beliefs emphasized that household should first buy a property to be called home, earlier in their lifetime. Furthermore, the Yoruba Culture and Igbo Culture encouraged large family size and as a consequent, increase the demand for housing and mortgage finance.

The research found that religious practices of households within the six regions were influential in the demand for housing and mortgage finance. The three main religions in

Nigeria (Christianity, Islam and Traditional religions), each region is divided among the three main religions and based on the tenets of the religions, these encouraged the purchase of their desired properties. For instance, the households that practices Islamic and traditional religions can marry up to four wives and consequently, the family size increase and demand for housing and mortgage finance increases, all things being equal.

This research also found out that the level of educational qualifications, good numbers of years of schooling and literacy levels influence the demand for housing and mortgage finance in Nigeria. The regional results revealed that across the six regions, educational qualifications, level of literacy and years of schooling influences the households to demand for housing and mortgage finance. Furthermore, due to the higher educational qualifications achievements in the southern part of Nigeria (south- east, south –south and south- west regions) compared to the norther parts of Nigeria (north-central, north- west, north- east regions), the demand for housing and mortgage finance is higher. This is due to the vibrate middle-income class which does drives the demand for housing and mortgage finance.

The research also found out that the household average income is also an important factor to influence the demand for housing and mortgage finance. In the regions, this research evidenced that as the household income increases, so is the demand for housing and mortgage finance. However, the household income in the south- east, south- south and south- west regions are higher compared to the north central, north- west and north- east regions. This research found out that more households demand for mortgage finance in the southern regions compared with the northern regions.

The economic buoyancy experienced in the country drives the demand for housing as well as the mortgage market. In the region, the economic buoyancy captured by the GDP per capita varies and this research found out that as GDP per capital increases in the regions, so also the demand for housing and mortgage finance increases.

Research Question Three: What are the impacts of Credit Rationing on the Demand for Mortgage Finance.

In **chapter 3**, the research emphasized that credit rationing on the demand for mortgage finance is critical to the understanding of the mortgage demand because rationing can

influence the household behaviour and welfare. Credit rationing in the mortgage market have been established to affect the household decisions in term of the tenure choice, level of housing consumption and life cycle planning (Leece 2004). In the same vein, the financial deregulation, which can reduce the credit rationing, should have a significant impact on the mortgage market and particularly, the demand for mortgage finance. The institutional structure of the financial market can also be used to identify the presence of mortgage rationing (Duca and Rosenthal (1991), Linnemann, et al (1997) and Ambrose et al (2002).

Theoretical models on asymmetric information to mortgage markets such as Brueckner (1994, 2000); Harrison et al (2004); Ben Shahar and Feldman (2003) was critically analysed to understand the theoretical perspective of the impact of asymmetric information on mortgage market. This emphasized the role of information advantage. This research found out that different mortgage contract highlighted different risk categories of borrowers that show the profitability of the lending to them and their likelihood default risk. This research corroborates the findings of Dunn and Spatt (1985); Chari and Jagannathan (1989). This was emphasized by Brueckner (1994, 2000) Harrison et al (2004); Ben Shahar and Feldman (2003).

The investigation of the impact of rationing on the demand for mortgage finance is grounded on two papers, Meen (1990) and Leece (1995, 2004).

This research built on Meen (1990) which emphasized the impact of structural shift on the financial and mortgage market. Leece (1995, 2004) used a double hurdle model structure to investigate the impact of credit rationing in the United Kingdom.

This research in **chapter 7** adopted a double hurdle model structure by Lecce (1995, 2004) to understand the impact of credit rationing in the Nigeria mortgage market. The impact of rationing are two levels, the first level is the impact of rationing on the ability of the households to own their properties or not and the second level is the impact of rationing on the size of the mortgage finance.

The logistic regression model in this research was used to capture the impact of rationing if the households will get a mortgage and truncated regression model was used to determine the impact of the rationing on the size of mortgage finance for those that got the mortgages.

The results are divided into pre and post periods as emphasized in Ortalo-Magne and Rady

(1998, 1999, 2002), which was used to capture the period when there was Banks recapitalization. In pre 2005, the minimum capital base of Banks was small (N2 Billions) and as a consequent, there were many weak banks which cannot play active role in the lending activities in the mortgage market. Many households were rationed. After 2005, there was a change in the capital base requirement of banks, it was increased to N25 Billions, and as a consequent, the number of banks were reduced significantly, and the banks were bigger and stronger. The banks were able to actively participate in lending in the mortgage market. Based on this, the credit rationing should reduce significantly.

This research investigated if the credit rationing exists in Nigeria after the 2005 bank recapitalization and how effective are the Banks in providing the long-term capital needed in the mortgage market.

The research found out in **chapter 7** that prior to the structural change in the banking sector (recapitalization exercise) credit rationing was severe in the Nigeria's mortgage market, thus prevented a lot of households from getting mortgages. However, the structural change in the capital base of banks (Increase in capital base) and as a consequent, due to the competition among banks led to the relaxation of the strict risk assessment criteria which made many households to get access to the mortgage finance, credit rationing ceased. Evidence was provided in Table 8.49.

Furthermore, the research found out that after the recapitalization exercise, credit rationing ceased in the mortgage market and many households obtained mortgages to buy their desired properties. However, in the years 2007 - 2008, due to the global financial crisis, bad investment, mismanagement of funds and bad leadership which led to the erosion of the bank's capital base and could be the causal factors, credit rationing resurfaced and very strict risk assessment criteria were introduced.

This research also provided empirical evidence that the geographical differences show that there are regional variations in house prices, tenure choice and the impact of rationing in the regions. The impact of rationing was severe in poor regions where the incidence of poverty is severe, this evidenced it that, there is a direct link between credit rationing and poverty. This is prominent in the northern east and northern west.

Furthermore, the research evidenced that the impact of rationing was severe on the young

population with low income. This emphasized the life cycle theoretical perspective, that consumption is a function of income.

In conclusion, this research found out that credit rationing was severe in the mortgage market due to the relatively low average household income, bad risk management framework, volatility in mortgage interest rate, high inflation rate and poor infrastructural development. The cross-section variables show that there are variations in family size, number of wives, educational attainment, geographical difference, industry and infrastructure influenced the access of households to mortgages, while the size of the property was determined by urban location, age, income and number of rooms. These findings conform with the Meen (2004) results. Evidence was provided in Table 8.49.

Research Question Four: What are the roles of the financial institutions, particularly banks, in determining the supply of funds needed in the Mortage market?

Chapter 4 emphasized that finance is centrepiece of the mortgage market. The role of the financial Institutions particularly Banks is critical to the development of the mortgage market and as well as providing the needed long-term funds to enable access to the households to buy their desired properties.

Ikpefan (2012) and Ajekigbe (2009) emphasized that this is critical particularly in a developing economy like Nigeria where the financial sector is catalyst for economic growth. This is because a robust financial system will bring about price stability, macroeconomic stability, employment generation and creation and increase in the national output, which enhance the ability of the households to demand for mortgage finance.

From the theoretical perspective, the activities of financial institutions particularly Banks is based on financial intermediation. Financial Intermediation is the process in which funds move from a surplus sector to deficit sector in an economy and the mechanism is facilitated by the financial institution particularly banks. Banks provide an avenue where savers can safely keep their money and gather such funds to create risk assets for a return.

This research used a revised model like previous studies such as Demirguc-kunt and Detragiache (1998), Anthanasoglou, Brissimis and Delis (2005), Flamini, McDonald, and

Schumacher (2009), Awojobi and Amel (2011), Akinwunmi (2009). The model was used to critically investigate the constraints in the financial system, which prevents the Banks from granting the long-term funds needed in the mortgage market.

The research in **chapter 6** adopted a four-stage model which was used to investigate factors/determinants that can influence the supply of the long-term funds in the mortgage market.

The four stage models include; firstly; bank-specific determinants, secondly; bank-specific determinants and industry specific determinants; thirdly, bank-specific determinants, industry specific determinants, macroeconomic determinants and fourthly; bank-specific determinants, industry specific determinants, macroeconomic determinants and institutional determinants. The model structure used four stages regression framework on annualized datasets from 1981 to 2017 obtained from World bank, Central bank of Nigeria, OPEC, Institute of economics and peace, transparency international. This cover periods where Nigeria financial architecture undergone restructuring in the term of recapitalization of the banking sector, Insurance sector, a significant reap output growth, high inflation, debt relief and cancellation and significant increase in the external reserves.

The research found out in **chapter 7** that bank's internal indicators can influence the ability of banks to grant the long-term funds needed in the mortgage market. The results revealed that the bank internal indicators such as the credit risk, operational expenses, capital base and total asset size does influence the lending pattern of the banks in Nigeria. Although the coefficients of these variables are not statistically significant, but this research is of the view that the financial position and strength of the banks is an important consideration when banks want to take active part in lending in the mortgage market.

The above results were further confirmed from the qualitative side of this research. The opinions of senior bankers and loan managers from the questionnaire revealed that bank internal factors can influence the supply of funds in the mortgage market. This research provided evidence in (see Table 7.55) in the industry believed that the ability of banks to grant the long-term funds needed in the mortgage market is influenced by bank internal determinants. Evidence provided on Table 7.55.

The research provided empirical evidence on industry-specific determinants. This revealed

that the activities of banks in term of lending behaviour are influenced by the industry. The results revealed that banks with the market power can easily influence the lending activities in the mortgage market and as a consequent, the mortgage interest rate, deposit and documentation requirements can be adjusted. Furthermore, the depth of the financial system encouraged and influenced to a greater extent the capacity of financial institutions particularly banks to actively supply the long-term funds needed in the mortgage market.

The qualitative side of this research is in chapter 7 where opinions of senior bankers and loan managers were obtained through an online questionnaire. This research found out based on the perception of the respondents (see Table 7.56) in the industry that the ability of banks to grant the long-term funds needed in the mortgage market is influenced by industry-specific determinants. Evidence provided in Table 7.56 for the actual percentages of respondents that agreed with the position. This corroborated the findings from the quantitative side of this study.

The research found out that macroeconomic indicators such as GDP growth, inflation and crude oil price can influence bank supply of funds in the mortgage market. This research found out that the rapid growth in the economy over the past ten years have created an avenue for the growth in the development of the mortgage market and as a consequent, banks could supply the needed funds in the mortgage market. Furthermore, the inflation rate did not discourage banks from lending to household to buy their desired properties. However, the revenue from oil has created volatility in the balance of payment account, thus, have an adverse impact on the exchange rate and led to the neglect of the housing market. Overall, the macroeconomic performances have influenced Bank performance and thus the supply of funds in the mortgage market.

The qualitative side of this research in chapter 7 where opinions of senior bankers and loan managers were obtained through an online questionnaire. This research found out based on the perception of the respondents (see Table 7.60) on the macroeconomics determinants that the ability of banks to grant the long-term funds needed in the mortgage market is influenced by macroeconomics determinants. Evidence provided in Table 7.60 for the actual percentages of respondents that agreed with the position. This corroborated the findings from the quantitative side of this study.

The research provided evidence in chapter 8 that institutional structures are significant determinants that can influence the supply of funds needed in the mortgage market. The research provided empirical evidence on how the effectiveness of the government housing policies could influence the financial Institution particularly banks to increase their supply of the long-term funds. For instance, government guarantee and contributory housing scheme as part of the housing policies would have further improve the supply of funds. Furthermore, Political stability is an influential determinant of supply of funds particularly in Nigeria that has a long period of military rule. The development of the insurance sector and its recapitalization further enhance the supply of funds in the mortgage market.

The qualitative side of this research in chapter 7 corroborated the quantitative side of this study. The evidence from the questionnaire revealed that based on the perception of the respondents (see Table 7.64) the institutional determinants influence on the ability of banks to grant the long-term funds needed in the mortgage market. Evidence provided in Table 7.64 for the actual percentages of respondents that agreed with the position.

The research question five: What are practitioners' perspectives of the perceived operational efficiency and effectiveness of banks and the mortgage market?

The perception of senior bankers and loan managers about the mortgage markets examined the operational efficiency and effectiveness of the industry in terms of mortgage finance provision, identify the inefficiency in the market and based on the results of the survey, this research identified the constraints in the mortgage finance market. This was based on the extensive discussion of the Nigeria mortgage market in **Chapter five**. Furthermore, this section was used to complement the quantitative aspect of this research and should triangulate the findings, which will be a useful tool to make informed recommendations in **Chapter Seven**.

A total of 37 responses were received from the online survey and based on these responses, the perception of participations' in the mortgage finance market was analysed.

The questionnaire is divided into six sections namely: bio data, cultural related matters, organisational specific issues, operational related matter, mortgage market constraints.

The followings were found out from the analysis of the questionnaire.

Based on the bio data analysis, the research found out that the respondents are matured and highly educated. The respondents are evenly distributed across the key job functions and based on the job functions, the respondents can be adjudged to be knowledgeable and experienced about the activities in the mortgage market **(see Table 7.55)**

The qualitative side of the research in chapter 7 (section 7.13.2) investigated the cultural related matters on the development of the mortgage market. The perception of the respondents was used to determine if the cultural-related issues such as: poor saving culture, lack of credit culture, customers unwillingness to give vital information and lack of debt repayment culture can affect the development of the mortgage market. The research found out that based on the perception of senior bankers and loan managers, cultural related matters does impact significantly on the development of the mortgage market. The results of the survey revealed that cultural related issues are instrumental to the strictness of the supply of mortgage finance in the mortgage market. From the survey, the 81.1% of the respondents are of the opinion that poor saving culture is limiting the access of households to mortgage finance. In addition, lack of credit culture, unwillingness of customers to give vital information, and lack of debt repayment culture agreed with over 80 % to be cultural related factors affecting the mortgage market **(see Table 7.55).** This conforms with the findings in Johnson (2014) where cultural related issues are identified to have significant impact on the demand for mortgage finance.

The results of Chapter 7 corroborated the results found in earlier chapters relating to research question one, two and four which identified the role of information in the mortgage market. This evidenced it that the unwillingness of customers to give vital information does affect the ability of banks to grant the long-term funds needed in the mortgage market. Furthermore, poor saving culture has been identified to affect the household to access the funds needed to acquire their desired property. This research provided categorically evidenced that information asymmetry and poor saving culture are predominant in Nigeria, this can confirm that many households are facing rationing in Nigeria.

This research in chapter 7 (section 7.13.3) further investigated the role of organisational specific issues such as the institutional perspectives to mortgage lending, the use of computer

and automation in the daily operations of the Bank, types of mortgage products and their target market, different means of creating awareness/advice to the customers on how to finance their desired property on how this impact on the ability of banks to supply funds needed in the mortgage market. The results of the survey revealed that overwhelming evidence that organisational specific issues limit the effectiveness of the banks' ability to supply the funds needed in the mortgage market **(see Table 7.56).** This confound with the findings of Nubi (2000).

This section tested the robustness and cross validate with research question one, two and four which identified the role of institutional perspectives to mortgage lending in the mortgage market. This section evidenced it that the inefficiency of banks in Nigeria does affect the ability of banks to grant the long-term funds needed in the mortgage market. This is centred on research question four (bank specific factors). Furthermore, the section identified the limited mortgage products and inability of banks to create awareness/advice to the customers, does affect the household demand for mortgage finance. This does triangulate with research question one. This research can deduce that since more than 80% of the respondents agreed that organisational specific issues identified are predominant in Nigeria, that can confirm that many households are facing rationing in Nigeria. This cross validate research question three. This further confirms the quantitative side of the study.

The impact on operational related matters such as changes in interest rate charged by banks, access to national housing fund (NHF) and existence of secondary finance mechanism, ability of banks to recover loan defaulted and foreclosure enforcement on the ability of banks to supply funds needed in the mortgage market were investigated in this research (section 7.13.4). The findings revealed that 80% of the respondents believed that operational related issues are significant factors that influence the development of the mortgage market **(see Table 7.59).** Nubi (2000) studies confirmed this.

This research in chapter 7 (section 7.13.5) investigated the impact of macroeconomic challenges on the development of the mortgage market. The findings of this research revealed that macroeconomic challenges such as high inflation rate, high interest rate, high volatility of crude oil and slow growth in GDP are limiting factors affecting the supply of funds in the mortgage market and thus, the development of the market **(see Table 7.60).** This justifies the findings of Demirguc-kunt and Detragiache (1998), Anthanasoglou et al (2005), Flamini et al

(2009), Akinwunmi (2009) Leece, (2004), Buckley et al, (2009), Chiquier and Lea, (2009), Hypostat, (2012).

This section provided a test of robustness and cross validation with research question 4. This provided further evidence that macroeconomic challenges identified such as high inflation rate, high interest rate, high volatility of crude oil and slow growth in GDP are limiting factors affecting the supply of funds in the mortgage market and thus, the development of the market.

This research in chapter 7 (section 7.13.5.2) investigated the impact of the policy and regulatory challenges on the development of the mortgage market. This research is of the view that effective policies formulation, implementation and constant review to check for impact analysis is a necessary condition for improving the performance of the mortgage market in order to provide the needed affordable housing. The survey results revealed that ineffectiveness of the housing policies is limiting factor affecting the development of the mortgage market **(see Table 7.63)**. Ezekwesili (2016) paper emphasized the effectiveness of policies in the development a country.

The impacts of institutional structure in Nigeria on the development of the mortgage market was investigated in chapter 7 (section 7.13.5.3). The followings were considered such as: the insurance practice, political environment/religion situation, bank recapitalization and corruption. The respondent's opinions revealed that poor state of insurance practice, political unrest and religious crises, bank recapitalization exercise and high level of corruption are impeding the development of the mortgage market **(see Table 7.64).** Koumpias at el (2015) emphasized the impact of corruption on housing bubble in Greece and Spain. Campbell (2012), EMD (2009) studies emphasized the role of institutional structure on the mortgage market.

This section provides cross validity with research question 4, particularly in relation to institutional structure challenges. This provided further evidence that policy and regulatory challenges identified does affect the performance of the mortgage market. This further confirms the quantitative side of the study.

Furthermore, the qualitative side of the research investigated the impact of financial sector challenges and how it impacts on the development of the mortgage market. The Nigeria financial sector is emerging, and such challenges can impact on the financial depth which will affect the supply of funds (mortgage finance) in the mortgage market. The financial sectors

challenges identified are absence of credit rating agency, Ignorance of national housing funds, absence of secondary market, restricted access to funds by Primary Mortgage Institution, high down payment requirement, lack of development of liquidity facilities framework to refinance mortgage assets, poor corporate governance compliance. The research provided evidence of the actual percentage of the respondents that agreed with the identified financial sector challenges as having very significant impact on the supply of funds needed in the mortgage market **(see table 7.65)**. Griffith-Jones et al (2014) paper confirmed the above findings.

The impact of housing sector challenges was also investigated from the perception of senior bankers and loan managers in section 7.13.5.5. The Nigeria housing sector challenges have peculiar characteristics which directly impact on the mortgage market. The identified housing sector challenges are low income level of average Nigerians, high cost of construction, high level of unemployment and irregular income, stringent condition for accessing funds, distrust of banks and financial institutions. The research provided evidence in table 7.66 the actual percentages of the respondents that agreed with the identified housing sector challenges does have very significant impact on the development of the mortgage market. Griffith-Jones et al (2014) paper confirmed the above findings.

This section provides cross validity with research question one, two and three which identified the housing sector challenges. This evidenced that the low-income level of average Nigerians, high level of unemployment and irregular income does affect the ability of households to demand for mortgage finance. This confirms the findings of research question. Furthermore, banks setting stringent condition for accessing funds was also identified as a constraint preventing household access to the mortgage market. This research can deduce that since more than 80% of the respondents agreed that housing sector challenges identified are predominant in Nigeria, this can confirm that many households are facing rationing in Nigeria. This triangulate with research question three. This further confirms the quantitative side of the study.

Having used structured questions to obtain the perception of senior bankers and loan managers. Another questioning style was used to obtain further evidence. Question 46 on the questionnaire was used. This research further investigated the perception of senior bankers and loan managers by encouraging the respondents to give a detailed discussion on the major issues affecting the mortgage market. Based on the survey, the research found that out of the

sixty-nine (69) constraints identified from the respondents, the outcomes revealed that economic constraints were 50.73%, financial constraints were 24.64%, political constraints were 20.3% and other constraints were 4.35% of the identified constraints (see Table 8.68).

Furthermore, the research investigated the perception of senior bankers and loan managers about the solution to the identified problems of the mortgage market. Question 47 from the survey was used. From the survey, thirty (30) solutions were identified from the respondents' and the research findings revealed that economic solutions were 33.33%, financial solutions were 34.33% and political solutions were 32.34% (see Table 7.69).

In summary, this research has used the practitioner's perspective to gain deeper understanding to the problems and constraints limiting the development of the mortgage market in Nigeria and based on the identified problems from this research policy recommendations were made.

8.3   Areas of further studies

While there are significant research findings from this study, it is important to emphasize that a time bound single research cannot answer all the questions on the Nigeria mortgage market. The study might have achieved its aim and objectives of estimating models for the demand and the supply side of the mortgage market as well as examine the regional prevalence, characteristics and determinants of the housing market. In addition to this, the study investigated the institutional factors and policy issues which could impact on the development of the mortgage market. A variety of other research questions have also emerged.

Firstly, the future models of the demand for mortgage finance in Nigeria could focus on risk and uncertainty in the mortgage markets and household decision making. This could have a significant impact on the ability of households to get mortgage finance and on household choice options on the level of debt and gearing levels.

Secondly, future studies on demand for mortgage finance could focus on mortgage choice options available. For instance, impact of the choice between repayment and endowment mortgage may influence the demand for mortgage finance. This is because the availability of choices could influence on endowment now and outright ownership at a future date.

Thirdly, the importance of taxation should be considered for future studies. The impact on taxation on personal income and property could influence the household choices. This

research did not consider that due to limitation of dataset. Future studies could investigate this when more datasets are available particularly in Nigeria.

Fourthly, the impact of financial innovative products in mortgage market could be exploited in future studies. For instance, the fixed rate mortgage vs variable rate mortgage which are popular in the United Kingdom and United States are not popular now in Nigeria. Future theoretical and empirical research focus on the impact of financial innovations on the household demand for mortgage finance and its influence on the supply side of the mortgage market.

8.4   Contribution of the Thesis

This section highlighted the significant contribution of this research to knowledge, theory and practice.

This research on mortgage market in Nigeria contributes to the knowledge by addressing the huge gap in literature particularly in an emerging economy where primary and secondary (cross-sectional and time series) data are used with sophisticated econometric methods. The quantitative side of this study contributed novel important research to the body of knowledge. Each of the chapters of this research demonstrated with evidence, origin research with well-defined structure which aligns with the aim of the study. The comprehensive literature chapters establish the origin, determinants, limiting factors and empirical evidence of the mortgage market. This was followed by research methodology, results analysis chapters. Finally, the results obtained from this study provided the opportunity to make important recommendations. The followings are the contribution to knowledge of this research:

8.4.1   Contribution of this research to knowledge.

The importance of conducting an extensive research is to make significant contribution to the body of academic knowledge. This research has made significant and novel contribution to literature, which are:

1. **Determination of the factors that can influence the demand for mortgage finance and demand for housing in Nigeria:** This research is the first known to attempt in modern times to empirically assess the demand for mortgage finance and demand for housing in Nigeria. The research made a significant contribution by being able to put

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value on the factors, determinants and limiting factors to the demand for mortgage finance and demand for housing in Nigeria in literature. There is no record of any previous research in Nigeria that have been able to empirically determine the demand for mortgage finance and housing in the Nigeria mortgage market. This significant contribution to knowledge and practice will provide an important decision-making tool for stakeholders in the industry, particularly government, policy makers, mortgage banker, Commercial bankers, investors and regulators.

2. **Determination of the regional differences in the demand for mortgage finance and demand for housing in Nigeria.** This research is the first known to attempt to have critically investigated the regional differences on the demand for mortgage finance and demand for housing where peculiar regional characteristics such religion, cultural differences and occupations can influence the household consumption pattern. There is no record of any previous research in Nigeria that have been able to empirically determine the regional differences and prevalent factors of demand for mortgage finance and housing in the Nigeria mortgage market. This significant contribution to knowledge and practice will provide an important decision-making tool for stakeholders in the industry, particularly government (Federal and regional), policy makers, mortgage bankers, Commercial bankers, investors and regulators. Consistent with the identified regional factors that affect demand for mortgage finance and housing, regions and federal government now have information for each region. The information will enable them to provide unique policy for each region and this is expected to deliver housing/mortgage to more households in each region and thereby helping to solve housing problems in Nigeria. This is very critical to the socio-political development and socio-economic development and stability of Nigeria.

3. Identification of the determinants of the supply of funds in the context of the mortgage finance market. This research is the first attempt to critically and empirically investigate the supply of funds in the mortgage finance market by examining the bank-specific determinants, industry specific determinants, macroeconomic determinants and institutional determinants within the context of the Nigeria financial landscape. The information need of stakeholders is provided by the findings of this research. This can remove information asymmetry that characterises the industry, open the

mortgage industry and enables the government, policy makers, mortgage provides to provide enabling environment for the enhancement of the supply side. i.e mortgage financing. The public will also be using this initiative and efforts of relevant bodies to climb the mortgage ladder.

8.4.2 Contribution to Theory

This research developed a four-stage model for the supply of funds by financial institutions particularly banks in Nigeria. This research structured a framework which summarise the links between literature, methods/methodology, results and recommendations particularly in an emerging economy like Nigeria. The novel framework extends the existing literature on the supply side of mortgage finance. For instance, Akinwunmi (2009) used bank specific determinants to investigate the supply of funds needed in the mortgage market. Demirguc-kunt and Detragiache (1998), Anthanasoglou, Brissimis and Delis (2005), Flamini, McDonald, and Schumacher (2009) studies used a three-stage model. However, the model did not emphasize the significant of institutional factors which does have significant impact on the financial market performance in an emerging economy like Nigeria. This research added to the body of literature by contributing to the theoretical as well as empirical debates on the supply of funds needed in the mortgage market. Financial market performance is also affected or influenced by institutional factors as established by this study. This is an addition to the three factors identified by extant literature e.g Demirgurc-Kunt and Detragiache (1998), Anthanasiglo, Brissimis and Delis (2005) and Flamini, McDonald and Schumacher (2009).

8.4.3 Contribution to Practice

This research contributes to knowledge by investigating the problems of the mortgage finance market from the perception of the senior bankers and loan managers who are directly involved in the mortgage lending processes in banks in Nigeria. This research gave practitioners the opportunity to give their opinions on the internal and external factors affecting the development of the mortgage market. The perspectives of practitioners were structured into the followings: cultural related matters, organisational specific issues, operational related matters and mortgage market constraints. Under the mortgage market, this research investigated the opinions of practitioners on macroeconomics challenges, policy and regulatory challenges, institutional challenges, financial sector challenges and housing

challenges. Furthermore, for the practitioner's perspectives, solutions were recommended to the problems identified. This is a novel contribution because no record of any previous study has investigated the constraints of the mortgage finance market from the perspective of practitioners which was used to complement the quantitative side of the study on mortgage market.

In summary, the research findings have confirmed the determinants, limiting factors, regional prevalence affecting the demand for mortgage finance and demand for housing in Nigeria. Furthermore, the research confirmed the determinants of the supply of funds needed in the mortgage market particularly in an emerging economy like Nigeria.

8.5   Policy recommendations

As emphasized by Akinwunmi (2009) this research within the context of empirical perspective attains a level of sophistication in analysing social phenomena. The main purpose is to establish facts and prescribe effective actions to be taken to ameliorate the problem identified. In this light and based on the findings of this research, the following recommendations are proposed.

Secondary Mortgage Institution

This research is of the view that the development of the secondary market should improve the Nigeria mortgage market. The research emphasized that there are possible sources of funding for the Nigerian secondary mortgage institution. This is based on argument that a well-developed secondary market can influence the financial depth in Nigeria and can provide the foundation for the supply of the long-term funds needed in the mortgage market.

These are discussed below:

African Development Bank: The bank was established in 1963 to contribute to the development of its member countries. The aim is to use its resources to finance investment projects and programmes relating to economic and social development of its country members. This research is of the view that the bank is well positioned to collaborate with the government institutions in Nigeria to finance the secondary mortgage market.

International Finance Corporation: The purpose of the corporation is to promote economic development particularly by encouraging the productive private enterprises in developing

member countries. Nigeria falls within the scope of the financing. Nigeria secondary market could benefit immensely from such funds which are yet to be tapped for the development of mortgage market.

African Export-Import Bank (Afreximbank): The purpose of the bank is to finance, promote and expand trade among African countries and the rest of the world. Specifically, the bank can assist the mortgage market by financing the importation of building materials. This is because Nigeria is import-dependent for all the material used in the housing sector. This will impact on the affordability criteria because many Nigerian will be able to access mortgage finance.

Nigeria Sovereign Wealth Fund: This was established to institutionalize the saving from crude oil proceeds which aimed to create saving funds for future generation, stabilization funds for cushioning of the budget shortfalls, and infrastructural funds for the development of infrastructure. The SWF started operations but its impact on the development of infrastructure is yet to bring out the dividend. This research is of the view that the infrastructure components might be sources of finance for the Nigeria housing sector. The government should increase the funding of the sovereign wealth fund to improve the mortgage market.

Develop a Sustainable Banking Framework

The government through the central bank of Nigeria should develop a framework for a sustainable banking. This should be aim at enhancing transparency, accountability and corporate governance among financial institutions particularly banks in Nigeria.

This code should emphasize good practices in the banking sector. This will curb excessive behaviour by bankers. This should cover the board of directors' responsibilities, duties, membership composition, remuneration. Furthermore, the banks relationship with its stakeholders regarding sustainable issues, risk management, audit processes, accountability and reporting, communications and code of ethics. When this is practiced by financial institutions in Nigeria, mortgage market will be developed. This is because the sustainable banking framework could serve as catalyst that will inspire the entire Nigeria financial industry from the Central bank of Nigeria, Nigeria Deposit Insurance Corporation (NDIC), Securities and Exchange commission (SEC), National Insurance Commission (NAICOM), Corporate Affairs Commission (CAC), Federal Ministry of Finance (FMF), Nigerian Stock Exchange (NSE), Nigeria

Commodity Exchange (NCX), the Federal Inland Revenue Service (FIRS) and the National Pension Commission (PenCom) and the deposit money banks (DMBs). The twenty-six (26) DMBs and a few foreign banks should be committed to the framework by signing and aligning with the principles and should be committed to applying them. The Principles and guidelines should comply with current Global Reporting Initiative (GRI) requirements.

Mortgage Insurance

The development of a robust Mortgage Insurance in Nigeria will significantly improve the overall performance of the mortgage market. This is because in an emerging economy like Nigeria, mortgage insurance is critical to the development of the mortgage market. Insurance provide a measure of risk management which can be catalyst for the growth of the mortgage market. Furthermore, Akinwunmi (2012) emphasized the significance of mortgage insurance in a developing economy. Merrill and Whiteley (2003), Whittingham (2005), Klopfer (2005), Cantor-Gable (2006) papers demonstrated that mortgage insurance offers credit protection to mortgage lenders particularly banks which provides the lenders a reliable means of transferring credit risk to the insurance sector. However, where the insurance sector does not have the financial depth to accommodate the mortgage market, then the mortgage finance market will be underdeveloped. Where there is a strong and robust insurance sector that can accommodate the mortgage finance market, it improves the lending business of the banks, improves the affordability for borrowers and thus, increase consumer's access to mortgage finance. The government should mandate the increase in capital base of insurance sector to increase its financial depth to accommodate the mortgage finance market and it should give guarantee to the mortgage lenders which should prevent loesses from lending in the mortgage market. This will achieve risk sharing by lenders, improve the standardisation and risk management in the mortgage market. This has been adopted in advanced economies like United States, United Kingdom, Germany, Canada. For examples, particularly the United Kingdom, robust and financial buoyant mortgage insurance has led to improved asset quality, improved market liquidity, greater social inclusion and transfer of risk outside the banking sector.

Transparency in Public Land Management

The land tenure system limits the ability of the markets to circulate land and protect the

development rights. This is particularly difficult in Nigeria where there are different tenure systems across the regions and generally lack of an effective and efficient land administration system. The main obstacles of land governance in Nigeria include land grabs, poor documentation, inefficient land administration, lack of transparency, low capacity and demand for professional land surveyors.

Furthermore, Nigeria land management system is prone to inefficiency and does not show transparency. For instance, at the state level, the state owns the land which undermines the mortgage market when titles cannot be obtained with ease due to the complex local tenure arrangements and lack of property registration. Also, some state governors use the lands in their states as gifts to individual and organizations for their patronage and political reward without regards to the previous owners which is a set back to the development of the mortgage market.

This research recommends the reduction of the governor's control over the supply of land, particularly in the urban areas. This will have to begin from the national legislators where amendments must be made to the land use act of 1978. The government should set a very low rate for property registration. This will encourage more properties to be registered and as such can attract mortgage finance. Many agencies have attempted to address this fundamental problem of property registration with the land information system and land registration programmes (World Bank 2015), however, it recorded a little success because of the huge fees charged for the service. If the revenue motive is removed, more properties will be registered, and the mortgage market will grow.

Infrastructure Provision

This research has evidenced that infrastructural provision is scarce and impact on the development of the mortgage market. Infrastructural facilities have attracted people to the urban centres and thus increase the demand for housing in such areas. Infrastructure refers mainly to the physical or system support for urban economy and society (World, 2015) and it includes clean water supply, sanitation and removal of human waste, good roads, power supplies (electricity) etc. The infrastructural gap in Nigeria is greater and it does affect the low-income households in the rural areas than those in the urban centres because those in the rural areas may not be able to provide such. Infrastructure has high upfront costs, which

current government both at the federal, state and local governments may not be able to afford.

The Nigeria government investments in infrastructure are mainly directed to those areas with land title and formal homes built by social housing programmes and large private developers. Furthermore, the outcome of the social programmes that is meant to benefit the poor and low-income households finds that the infrastructure investments in Nigeria drives land speculation and as a consequent, leads to the displacement of the lower-income households by the upper/middle income households because those lower-income group may be able to afford the property prices and thus the failure of the intervention programme.

The research recommends a holistic approach by the government to provide infrastructural development by encouraging the public-private partnerships. Akintoye (2008) emphasized that funding major infrastructural developments has become a challenge for emerging economies that depends solely on government capital investment budget. It was noted that despite the higher need for infrastructural development in low income countries in the emerging economies, the level of participation of private sector is very low and highlighted energy as one of the sectors where investments are urgently needed.

Government can play a significant role in developing targeted subsidies and support private sector involvement in infrastructural provision. This research emphasized that government should prioritize infrastructure investments to low-income and deficient areas. This will lower the property prices and as a consequent, will increase access of those households to the mortgage market.

Housing Microfinance

This is very important for the development of the mortgage market in an emerging market like Nigeria. The housing microfinance product development should be encouraged because of savings from low income households that does not have access to the commercial banking. The role of housing microfinance will be to gather savings from the households in the informal sector without regular income and poor credit history. Furthermore, this has the capacity to enable the low-income households that have been excluded from the mortgage market because they don't have stable income and titled property to afford a mortgage, access to savings which could be used as initial deposit for a property. Consequently, with the housing microfinance, commercial lending for low-income, informally employed populations of

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Nigeria with low incomes, lack of collateral and high default or payment delinquency risks can be improved.

Housing microfinance can provide products that encourages saving which offer borrowers a reduced interest rate on their mortgage loan when the households have saved at least 10 percent of the property price. This made is easier to deal with different associations and partnerships to finance an affordable housing development programme. This is because the associations are local and member-owned and leverage the power of collective savings and accountability. The housing microfinance can also leverage on dealing with a group with access to land which can be used as a guarantee and thus enhance the development of the mortgage market. However, housing microfinance is still at the infant stage, Government should support the housing microfinance by funding and guarantee it so that it can develop.

Products development

Mortgage products in Nigeria mortgage market is quite few and this restrict the options available to households to make choices. A responsible mortgage finance provider's products should have the following characteristics: easy to administer from the responsible finance provider perspective, easy to understand and useful from the customer perspective, must be able to provide access to fair and affordable finance to households that are not financially sophisticated not requiring a wide range of complex products. Most mortgage finance providers in Nigeria offer a small range of loans, some responsible finance providers offer a more complex range of products to meet the needs of larger borrowers.

In Nigeria, the available mortgage products are short term fixed mortgages which create affordability challenges for the low-income households and as a consequent, restrict the development of the mortgage market. However, in advanced economies there are mix of mortgage products such as variable, short-term, medium-term and long-term fixed rate mortgages. For instance, in Belgium, Germany, Denmark have long-term mortgage of a tenure of over ten years which is over of 45% of the mortgage market portfolio (Bragt 2018). Other countries such as Ireland, Sweden, Italy, UK, Spain, Netherland have a mixed mortgage loans portfolio of as variable, short-term, medium-term and long-term fixed rate mortgages (EMF 2017, Bragt 2018).

This research recommends that mortgage finance providers in Nigeria should design various

products mix that meet the various categories of households with the aim of providing accessibility to the mortgage market. This will enable the Nigeria mortgage market to grow from its current position.

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Appendix 1 - 7.3　　Structure of the Dataset

The surveys are divided into 13 sections which examined various aspect of household behaviour and characteristics. The sections examined households' perspectives to their work life, expenditure and their consumption pattern which is highly valuable for this research.

This study examined the various sections and identify the variables that could impact on demand for housing and demand for mortgage finance particularly in the Nigeria context. In addition to this, each of the categories of the dataset and variables definitions and frequency will also be discussed.

Data Classification, Description and Frequency

Technical household Variables

Table 7.2 Number of Persons in the Household

Number Of Persons	Frequency	Percent
1	18976	4.5
2	18834	4.4
3	35088	8.2
4	53796	12.6
5	63010	14.8
6	58824	13.8
7	49595	11.6
8	35952	8.4
9	25434	6
10	19440	4.6
11	12958	3
12	12432	2.9
13	6331	1.5
14	4858	1.1
15	7725	1.8
16	704	0.2
17	612	0.1
18	396	0.1
19	342	0.1
20	500	0.1
21	63	0
22	132	0
23	92	0
24	96	0
25	25	0
45	180	0
Total	**426395**	**100**

Table 7.3   Number of unrelated persons

		Frequency	Percent
Valid	0	423258	99.3
	1	2427	.6
	2	509	.1
	3	71	.0
	4	78	.0
	5	32	.0
	8	20	.0
	Total	426395	100.0

Table 7.4   Urban-rural status

		Frequency	Percent
Valid	Rural	320300	75.1
	Urban	105845	24.8
	Unknown	250	.1
	Total	426395	100.0

Table 7.5 Ownership of dwelling

		Frequency	Percent
Valid	Owned	280666	65.8
	Not owned	116582	27.3
	Unknown	29147	6.8
	Total	426395	100.0

Table 7.6   Nigeria States Households Surveyed

States	Frequency	Percent
Abia	9436	2.2
Adamawa	12006	2.8
Akwa-Ibom	10531	2.5
Anambra	8585	2
Bauchi	13105	3.1
Bayelsa	7786	1.8
Benue	13285	3.1
Borno	11322	2.7
Cross River	8922	2.1
Delta	7986	1.9
Ebonyi	12868	3
Edo	9672	2.3
Ekiti	8586	2
Enugu	8574	2
Gombe	10804	2.5
Imo	10781	2.5
Jigawa	16653	3.9
Kaduna	18123	4.3
Kano	16212	3.8
Katsina	15071	3.5
Kebbi	17547	4.1
Kogi	9324	2.2
Kwara	10272	2.4
Lagos	9382	2.2
Nasarawa	13237	3.1
Niger	12857	3
Ogun	7716	1.8
Ondo	8906	2.1
Osun	8536	2
Oyo	9932	2.3
Plateau	14346	3.4
Rivers	8781	2.1
Sokoto	13739	3.2
Taraba	12258	2.9
Yobe	13174	3.1
Zamfara	14566	3.4
FCT	11511	2.7
Unknown	3	0
Total	426395	100

Table 7.7 Nigeria States Households Surveyed By Ownership status

States	Frequency	Percentage of Household that owns property (66%)	Percentage of Household that don't own property (34%)
Abia	9436	6228	3208
Adamawa	12006	7924	4082
Akwa Ibom	10531	6950	3581
Anambra	8585	5666	2919
Bauchi	13105	8649	4456
Bayelsa	7786	5139	2647
Benue	13285	8768	4517
Borno	11322	7473	3849
Cross River	8922	5889	3033
Delta	7986	5271	2715
Ebonyi	12868	8493	4375
Edo	9672	6384	3288
Ekiti	8586	5667	2919
Enugu	8574	5659	2915
Gombe	10804	7131	3673
Imo	10781	7115	3666
Jigawa	16653	10991	5662
Kaduna	18123	11961	6162
Kano	16212	10700	5512
Katsina	15071	9947	5124
Kebbi	17547	11581	5966
Kogi	9324	6154	3170
Kwara	10272	6780	3492
Lagos	9382	6192	3190
Nasarawa	13237	8736	4501
Niger	12857	8486	4371
Ogun	7716	5093	2623
Ondo	8906	5878	3028
Osun	8536	5634	2902
Oyo	9932	6555	3377
Plateau	14346	9468	4878
Rivers	8781	5795	2986
Sokoto	13739	9068	4671
Taraba	12258	8090	4168
Yobe	13174	8695	4479
Zamfara	14566	9614	4952
FCT	11511	7597	3914
Unknown	3	2	1
Total	426395	281421	144974

Table 7.8   **Nigeria Zonal Distribution Surveyed**

		Frequency	Percent	Percentage of Household that owns property (66%)	Percentage of Household that don't own property (34%)
Valid	North Central	84895	19.9	56031	28864
	North East	72763	17.1	48024	24739
	North West	111807	26.2	73793	38014
	South East	50203	11.8	33134	17069
	South South	53672	12.6	35424	18248
	South West	53050	12.4	35013	18037
	Unknown	5	.0	3	2
	Total	426395	100.0	281421	144974

Note: Computed Number of Households ownership Status using 66% for ownership and 34% for not owning their properties.

Table 7.9   **Electricity**

		Frequency	Percent
Valid	Yes	193008	45.3
	No	203596	47.7
	Unknown	29791	7.0
	Total	426395	100.0

Table 7.10   **Water supply**

		Frequency	Percent
Valid	Yes, piped water	39279	9.2
	No piped water	357944	83.9
	Unknown	29172	6.8
	Total	426395	100.0

Table 7.11   Telephone availability

		Frequency	Percent
Valid	No	379944	89.1
	Yes	14440	3.4
	Unknown/missing	32011	7.5
	Total	426395	100.0

Dwelling Characteristics Variables

Table 7.12   Number of rooms

		Frequency	Percent
Valid	Part of a room; no rooms	865	.2
	1	45772	10.7
	2	89883	21.1
	3	88212	20.7
	4	75133	17.6
	5	38335	9.0
	6	26344	6.2
	7	10156	2.4
	8	9476	2.2
	9	3750	.9
	10	4249	1.0
	11	884	.2
	12	1672	.4
	13	358	.1
	14	579	.1
	15	1352	.3
	16	330	.1
	17	85	.0
	18	115	.0
	19	51	.0
	20	112	.0
	21	13	.0
	22	28	.0
	23	7	.0
	24	34	.0
	25	41	.0
	27	4	.0

	Frequency	Percent
28	8	.0
30+	342	.1
Unknown	28205	6.6
Total	426395	100.0

Constructed Family Interrelationship Variables

Rule for linking parent:

Table 7.13   **Link to Parents**

Categories	Frequency	Percent
No parent of person in household	194488	45.6
Link to head or spouse, unambiguous	167553	39.3
Link to head or spouse, ambiguous	61852	14.5
Child-Grandchild, within empirical child cap	75	0
Child-Grandchild, within constructed child cap	2105	0.5
Child-Grandchild, exceeds child cap	17	0
Specified Other Relatives, within empirical child cap	7	0
Specified Other Relatives, within constructed child cap	251	0.1
Other Relatives, within empirical child cap	3	0
Other Relatives, within constructed child cap	37	0
Non-Relatives, within constructed child cap	7	0
Total	426395	100

Table 7.14   **Man with more than one wife linked**

		Frequency	Percent
Valid	No more than one wife linked	415837	97.5
	More than one wife linked	10558	2.5
	Total	426395	100.0

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Table 7.15　　　　**Family Size**

Number of Family Size	Frequency	Percent
1	20270	4.8
2	18894	4.4
3	35007	8.2
4	53744	12.6
5	62920	14.8
6	58692	13.8
7	49455	11.6
8	35872	8.4
9	25272	5.9
10	19270	4.5
11	12914	3.0
12	12348	2.9
13	6292	1.5
14	4830	1.1
15	7710	1.8
16	672	0.2
17	629	0.1
18	378	0.1
19	399	0.1
20	440	0.1
21	42	0.0
22	132	0.0
23	92	0.0
24	96	0.0
25	25	0.0
26	426395	100.0

Demographic Variables

Sex:

Table 7.16　　　　**Sex**

		Frequency	Percent
Valid	Male	219001	51.4
	Female	206840	48.5
	Unknown	554	.1
	Total	426395	100.0

Marital Status (MARST):

Table 7.17   **Marital status**

		Frequency	Percent
Valid	Single/never married	252285	59.2
	Married/in union	154163	36.2
	Separated/divorced/spouse absent	4980	1.2
	Widowed	11444	2.7
	Unknown/missing	3523	.8
	Total	426395	100.0

Age:

Table 7.18   **Household Age into Groups**

		Frequency	Percent
Valid	0 to 4	57736	13.5
	5 to 9	70894	16.6
	10 to 14	52504	12.3
	15 to 19	41285	9.7
	20 to 24	31258	7.3
	25 to 29	31143	7.3
	30 to 34	26359	6.2
	35 to 39	24478	5.7
	40 to 44	21731	5.1
	45 to 49	17601	4.1
	50 to 54	15812	3.7
	55 to 59	9365	2.2
	60 to 64	9654	2.3
	65 to 69	5985	1.4
	70 to 74	4933	1.2
	75 to 79	2195	.5
	80+	3245	.8
	Unknown	217	.1
	Total	426395	100.0

Table 7.19   Number of Children

Number of Children		Frequency	Percent
Valid	0	290334	68.1
	1	26964	6.3
	2	31851	7.5
	3	27881	6.5
	4	20219	4.7
	5	13143	3.1
	6	7198	1.7
	7	3834	.9
	8	2106	.5
	9	2865	.7
	Total	426395	100.0

Number of Children Under age of five (Child_5)

Table 7:20	Number of Children Under five		
		Frequency	Percent
Valid	0	355849	83.5
	1	43216	10.1
	2	22002	5.2
	3	4154	1.0
	4	879	.2
	5	199	.0
	6	47	.0
	7	9	.0
	8	6	.0
	9	34	.0
	Total	426395	100.0

Education Variables

Table 7.21	Literacy		
		Frequency	Percent
Valid	NIU (not in universe)	8678	2.0
	No, illiterate	189568	44.5
	Yes, literate	213403	50.0
	Unknown/missing	14746	3.5
	Total	426395	100.0

Table 7.22   **Years of schooling**

		Frequency	Percent
Valid	None or pre-school	185938	43.6
	1 year	14782	3.5
	2 years	14967	3.5
	3 years	14190	3.3
	4 years	12451	2.9
	5 years	10785	2.5
	6 years	43876	10.3
	7 years	8505	2.0
	8 years	8935	2.1
	9 years	12376	2.9
	10 years	7271	1.7
	11 years	9618	2.3
	12 years	43988	10.3
	13 years	21637	5.1
	Not specified	5574	1.3
	Some primary	30	.0
	Some secondary	297	.1
	Unknown/missing	2496	.6
	NIU (not in universe)	8679	2.0
	Total	426395	100.0

able 7.23   **Educational attainment, Nigeria**

Qualifications	Frequency	Percent
NIU (not in universe)	8679	2
None	166285	39
Nursery, pre-class	5680	1.3
Nursery, year 1	5402	1.3
Nursery, year 2	5841	1.4
Nursery, year unknown	2730	0.6
Primary, year 1	14782	3.5
Primary, year 2	14967	3.5
Primary, year 3	14190	3.3
Primary, year 4	12451	2.9
Primary, year 5	10785	2.5
Primary, year 6	43789	10.3
Lower 6	87	0

Junior Secondary School, year 1	8505	2
Junior Secondary School, year 2	8935	2.1
Junior Secondary School, year 3	12246	2.9
Modern school	130	0
Senior Secondary School, year 1	7271	1.7
Senior Secondary School, year 2	9618	2.3
Senior Secondary School, year 3	43901	10.3
Upper 6	87	0
Teacher training	155	0
Vocational or technical	142	0
National certificate of education (NCE)	1236	0.3
A-Level or National Diploma (ND)	11051	2.6
Bachelor or Higher National Diploma (HND)	8246	1.9
Post-graduate	1104	0.3
Other	1251	0.3
Quranic	2263	0.5
Quranic integrated	2060	0.5
Adult education	30	0
Unknown	2496	0.6
Total	**426395**	100

Work Variable

Table 7:24   **Industry**

Industries	Frequency	Percent
NIU (not in universe)	276959	65
Agriculture, fishing, and forestry	90191	21.2
Mining	308	0.1
Manufacturing	5303	1.2
Electricity, gas and water	507	0.1
Construction	1712	0.4
Wholesale and retail trade	21433	5
Hotels and restaurants	1233	0.3
Transportation, storage and communications	3258	0.8
Financial services and insurance	513	0.1
Public administration and defense	3998	0.9
Real estate and business services	2111	0.5
Education	5215	1.2
Health and social work	1746	0.4
Other services	5596	1.3
Private household services	627	0.1
Other industry, n.e.c.	393	0.1
Unknown	5292	1.2
Total	426395	100

Table 7.25 Household Head Level Income

Household Income level	Frequency	Percent
0	281878	66.1
0 - 10000	7087	1.7
10001 - 20000	16343	3.8
20001 - 30000	78659	18.4
30001 - 40000	30861	7.2
40001 -50000	8452	2
50001 -60000	2364	0.6
60001- 70000	530	0.1
70001 - 80000	127	0
80001 - 90000	12	0
90001 -100000	5	0
1000001 - 1100000	4	0
1100001 -1200000	1	0
Total	**426395**	**100**

Employment Status:

Table 7.26   Employment status

		Frequency	Percent
Valid	NIU (not in universe)	63599	14.9
	Employed	146297	34.3
	Unemployed	4463	1.0
	Inactive	156672	36.7
	Unknown/missing	55364	13.0
	Total	426395	100.0

In summary, based on the various variable discussed here, this research will identify suitable variables based on theoretical and empirical model on the demand for mortgage finance and adopt a model suitable and applicable in the Nigeria context.