



**UNIVERSITI PUTRA MALAYSIA**

***STATE OF FOOD SECURITY, ITS DETERMINANTS AND COPING  
STRATEGIES AMONG HOUSEHOLDS IN NIGERIA***

**NURUDEEN ABUBAKAR MUHAMMAD**

**IPTSM 2020 12**



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By

**NURUDEEN ABUBAKAR MUHAMMAD**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia  
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**June 2020**

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## DEDICATION

This thesis is dedicated to the memory of my late father Dr. Abubakar Muhammad Sokoto who left us on the 17<sup>th</sup> of October, 2017, while I was in Malaysia pursuing this Ph.D. programme.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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**June 2020**

**Chairman : Associate Professor Shaufique Fahmi bin Ahmad Sidique PhD**  
**Institute : Agriculture and Food Policy Studies**

Nigeria, one of the most populous countries in Sub-Saharan Africa, is blessed with both endowments of natural or human resources, having the capacity to be prosperous, providing basic needs for all its citizens. However, she was still ranked among the poor and undernourished nation in the world, registering very high poverty level, signalling the seriousness of the situation that requires attention. Few related studies had been undertaken but mostly covering smaller sample sizes and often faced with challenges such that drawing a general conclusion was largely impossible. It was against this background that an empirical study was conducted in three waves of general households' surveys for years 2010-11, 2012-13 and 2015-16, examining food security status and its determinants, as well as its coping strategies among insecure households.

The first objective covered an overview on the changes of households' food security using households' food security index, a food consumption score approach and arc geographic information system (GIS) maps. Data revealed that the state of households' food security level was largely moderate, and movement from food insecure state to food secured state was very slow as virtually very few households moved from the former to the latter state. The study reported that the southern part of Nigeria was more food secured as compared to the northern segment attributed to the disparity of socio-economic benefits. The second objective examined the impacts of determinants of food security amongst households. Data on fixed effect panel revealed that expenditure on foodstuffs, household size, household size square, alternative job income, land size, access to amenities and gifts had significant positive influences on household food security. The third objective examined the effects of coping strategies options adopted by insecure households. Household assets and remittances indicated some degrees of negative significance with household food insecurity. The findings queried existing policies, projects and programs which were designed to focus on the

poor and food insecure households. The study raised issues on some coping mechanisms that were supposedly to affect food insecurity but were silent especially in rural segment of the society, predominantly hosted by the poor. The study recommended for strong and efficient income promotion strategies in attempt at boosting income level of households, and in turn, improving access to food procurement, achievable through government embarking on projects and programmes that provide alternative income to households like in-farm or off-farm related enterprises. There was the need for policies that complement agricultural production through improving farming techniques, new seed varieties, processing and storage facilities. Educating households on the importance of knowledge in uplifting standard of living of people that acquire it attainable through providing increased investment in the educational sector. Educating households on the danger of increasing household size without corresponding food options should also be intensified. The present study presented the key factors affecting household food security, which was expected to proffer solution to the problem of policy summersault and to create a lasting solution in the area of addressing food security issues among households in Nigeria.

Abstrak tesis yang dikemukakan kepada senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**STATUS KESELAMATAN MAKANAN, PENENTU DAN STRATEGI  
MENGATASINYA DIKALANGAN ISI RUMAH DI NIGERIA**

Oleh

**NURUDEEN ABUBAKAR MUHAMMAD**

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Nigeria adalah satu negara sub-sahara Afrika yang berpendudukan tinggi, diberkati dengan kedua endowmen semulajadi alam dan sumber manusia yang mempunyai keupayaan menjadi negara makmur dalam menyediakan keperluan asas bagi semua warganegarannya. Walau bagaimanapun, ia masih berkedudukan antara negara yang termiskin dan terkurang makanan di dunia, dan telah direkodkan berada ditahap kemiskinan yang tertinggi, dan memberi isyarat keseriusan keadaan yang memerlukan perhatian. Beberapa kajian berkaitan telah dijalankan tetapi kebanyakannya merangkumi saiz sampel yang kecil dan sering berhadapan dengan cabaran yang menyebabkan kesimpulan umum sukar tercapai. Dengan berlatar-belakangkan keadaan, satu kajian empirikal telah dijalankan dalam tiga pusingan kaji selidik rumah tangga pada tahun-tahun 2010-11, 2012-13 and 2015-16, mengkaji status keselamatan makanan dan penentunya, serta strategi mengatasinya di kalangan rumah tangga yang tiada kemampuan.

Objektif pertama kajian merangkumi gambaran keseluruhan dinamik rumah tangga atas keselamatan makanan dengan menggunakan indeks keselamatan rumah tangga, satu skor penggunaan makanan dan peta sistem maklumat geografi arka (GIS). Data kajian menunjukkan bahawa kedudukan tahap keselamatan makanan rumah tangga sebahagian besarnya adalah sederhana, dan pergerakan dari keadaan makanan tidak terjamin ke keadaan makanan terjamin adalah terlalu perlahan oleh kerana terlalu sedikit pergerakan rumah tangga berlaku. Kajian melaporkan bahawa keselamatan makanan di bahagian selatan Nigeria adalah lebih terjamin daripada bahagian utara oleh kerana ketidaksamaan manfaat sosioekonomi. Objektif kedua kajian meneliti impak penentu keselamatan makanan di kalangan rumah tangga. Data yang diperolehi daripada panel kesan tetap menunjukkan bahawa perbelanjaan atas makanan, saiz rumah tangga, persegi saiz rumah, pendapatan daripada pekerjaan alternatif, bidang tanah, akses kepada kemudahan dan hadiah mempunyai kesan ketara yang positif keatas

keselamatan makanan rumah tangga. Objektif ketiga kajian meneliti kesan pemilihan strategi mengatasi yang digunapakai oleh rumah tangga berkurangan keselamatan makanan. Aset rumah tangga dan penghantaran wang menunjukkan ketaraan negatif dengan ketidaan keselamatan makanan rumah tangga. Kajian mempersoalkan polisi sedia ada, projek dan program yang direka untuk memberi tumpuan kepada orang miskin dan rumah tangga yang berkedudukan tidak selamat makanan. Kajian menimbulkan isu berkaitan dengan mekanisma mengatasi yang seharusnya memberi kesan kepada keselamatan makanan, tetapi disembunyikan terutama kepada masyarakat di bahagian luar bandar yang sebahagian besarnya adalah orang miskin. Kajian menyarankan strategi mempertingkatkan pendapatan yang kukuh dan cekap dalam usaha meningkatkan tahap pendapatan rumah tangga, sekaligus memperbaiki akses kepada perolehan makanan, tercapai melalui projek dan program kerajaan yang memberi pendapatan alternatif kepada rumah tangga seperti perusahaan di ladang dan di luar ladang. Ada perlunya mengwujudkan polisi yang menjadi pelengkap dalam pengeluaran pertanian melalui pembaikan teknik pertanian, biji benih variti baru, pemprosesan dan kemudahan penyimpanan. Mendidik rumah tangga mengenai pentingnya pengetahuan dalam meningkatkan taraf hidup bagi yang mempunyainya tercapai melalui meningkatkan pelaburan dalam sektor pendidikan. Mendidik rumah tangga atas bahayanya meningkatkan saiz rumah tangga tanpa pilihan makanan yang bersesuaian harus dipergiatkan. Kajian ini membentangkan faktor utama yang memberi kesan kepada keselamatan makanan rumah tangga yang dijangka memberi penyelesaian kepada masalah dasar dan merangka penyelesaian yang berkekalan dalam isu keselamatan makanan di kalangan rumah tangga di Nigeria.

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Nurudeen Abubakar Muhammad (June, 2020)

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment for the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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## LIST OF ABBREVIATIONS

CARE:	Cooperative for Assistance and Relief Everywhere
DFID:	Department for International Development
NBS:	Nigerian Bureau of Statistics
SDG:	Sustainable Development Goals
SSA:	Sub-Saharan Africa
UN:	United Nation
FAO:	Food Agricultural Organisation
WHO:	World Health Organisation
WFP:	World Food Programme
IFAD:	International Funds for Agricultural Development
USAID:	United State Agency for International Development
NSPFS:	National Special Programme on food security
WDI:	World Development Indicators
MDG:	Millennium Development Goals
GFSI:	Global Food Security Index
IFPRI:	International Food Policy Research Institute
IMF:	international Monetary funds
UNCTAD:	United Nations Conference on Trade and Development.
CSI:	Coping Strategy Index
FCS:	Food Consumption Score
VAM:	Vulnerability Analysis Mapping
GHS:	General Household Survey

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Issues on food security, hunger, poverty, malnutrition, environmental degradation and climate change together with their devastating effects on health, food production, and wellbeing of the population have for long been a subject of debate around the world (Maxwel 1996; FAO, 2010; Von-Grebmer 2016; FAOSTA, 2016; World Bank 2017; World Development Indicators (WDI), 2019). In Nigeria, the issues on poverty, hunger, malnutrition, climate change, seasonal variations, fluctuation in food prices, rising population, religious intolerance and communal clashes, aided by political ill motives, have worsened the problems of household food security (Adeyemi *et al.*, 2009). The issue was of grave concern that required the attention and intervention of all relevant authorities, interest groups and international organisations.

The problem of household food security has been among the causative agents of looming crises and social vices that can lead to the collapse of the whole economy (Adibe, 2013; Alozieuwa, 2012). Undoubtedly, the problem, if allowed to continue, will breed of more hunger, poverty, malnutrition, infant mortality, theft, thuggery, idleness, morbidity and social vices. Nigerians have already suffered and still are. Moreover, this mayhem has forced many people into desperate criminal activities in an attempt to acquire food. According to evidences from literature, there exists a strong link between social problems, communal clashes and societal unrest happening in Nigeria from 1999 to date with issues of poverty, hunger and household food security problems.

### 1.2 Background of the Study

Food is inevitably paramount for human existence and life in general, its survival, growth and reproduction. Food refers to all that is required for energy and nourishment, and is classified into six distinct categories: carbohydrates, proteins, fats, vitamins, minerals and animal feeds. The current trend of global food production has proven with open clarity that much is needed to be done in order to alleviate hunger and achieve “global food security”. Thus, “food security refers to a condition in which people at all times have physical, social, and economic access to nutritiously balanced, safe and sufficient food that meets their dietary needs and preferences for an active and healthy life” (World Food Summit, 1996; Shaw, 2007). According to United State Agency for International Development (USAID, 1992), the main aim of food security is to “guarantee an individual’s freedom to food availability, accessibility, stability, choice preference as well as its effective utilization of food choice in accordance with body requirements.”

From the definition, it can be deduced that household food security means the collective food status for all household members together, and not for any particular individual member of the household (Bickel *et al.*, 2000). According to Food Agricultural Organisation (FAO), a household is food secured when the household has year-round access capacity to provide the amount and variety of safe food their members required to live an active and healthy life (FAO, 2010). This can be explained further as the ability of the household to secure either from direct own production or purchase, of adequate food that conforms with dietary needs all members of the household.

Although the conditions of food security do affect the entire household members, it is known fact that the effects may not affect all its members in same manner. Ingawa (2002), cited households' food security to mean having physical and economic access to safe and adequate food stuffs both in quantity and quality bounded by culture and beliefs for members of the household.

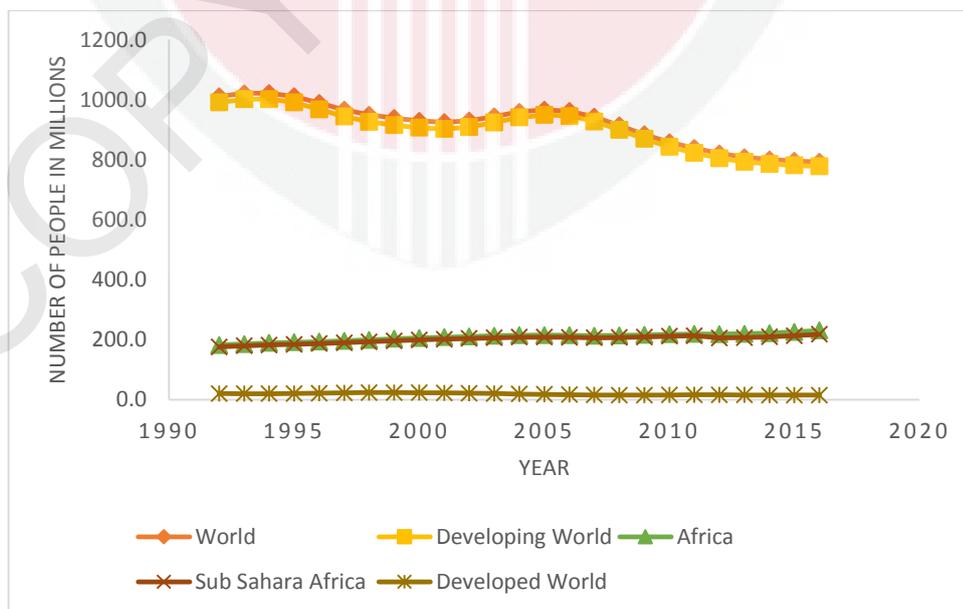
The whole struggle for achieving household food security is to remove hunger, address malnutrition and poverty. This has been the reason why this effort remained top of agenda on problems associated with human health and socioeconomic development in most developing countries around the world. This is can be accomplished by initiating programmes designed to improve common people access to basic necessities of life. Statistics have shown that large number of people around the globe are still battling to be food secured, as they lack adequate food for an active and healthy life. FAO (2019) reported that more than 820 million people in the world are still hungry today, underscoring the immense challenge of achieving the “Zero Hunger target by 2030” (Russell *et al.*, 2018).

Hunger is rising in almost all subregions of Africa. The prevalence of undernourishment is another disturbing fact in which about 2 billion people in the world are experiencing moderate or severe food insecurity. The lack of regular access to nutritious and sufficient food that these people require, puts them at greater risk of malnutrition and poor health (Figure 1.1). The most worrisome of all is the anticipation that the figure is more likely to rise between now and 2050; when the world population is predicted to increase by more than forty per cent (40%) (FAO & World Health Organisation; WHO, 2010). Therefore, against this background FAO, (2010) came up with the suggestion that, for the global food security to be achieved, world food production needs to be increased by more than 60%. However, this increase in food production alone may not, guarantee food security without complementing policies that enhances household and individual access to food at all levels. This could be attained through waging war on poverty especially around rural areas coupled with serious measures in place for effective safety net programmes.

It has also been stressed that the severity of food security issues will be more around developing world regions, especially among Sub-Saharan African countries. The struggle towards attaining food security in those areas has suffered tremendous setback and slow progress although, some countries in the regions, such as Ghana and

South Africa, have achieved modest progress as reported by FAO and World Food Programme (FAO & WFP, 2016). In effect, within the Sub-Saharan Africa (SSA) alone, the population of the undernourished was estimated to be around 232 million people between 2014-16. Likewise, the report on the food balance sheet from FAO (2016), has revealed that there was a consistent decline in global food inadequacy from 1990-2016 and the Sub Saharan Africa had the higher percentage of food inadequacy. Therefore, ensuring adequate food supplies for these regions requires faster growth mechanism in agricultural output than what was observed over the past few decades (FAO and International Fund for Agricultural Development) (IFAD & FAO, 2013; Godfray *et al.* 2010).

The issues highlighted above is worrying any country in Africa more so Nigeria. The fact is simple. It shares roughly 47% of the total population of Sub-Sahara Africa (SSA) and by extension, in every five people in SSA, one is Nigerian (World Bank, 2012). According to world population review of the United Nations Department of Economics and Social Affairs, the Nigerian population was estimated at 390million in 2050 (UN, DESA, 2019), that is, almost double of what it is today, indicating the need for corresponding food supply increase to cater for the rising population. According to FAO, (2010), rapid increase in population and high fertility rates were among the most common problems causing food insecurity in developing world. Nigeria was not an exception. Nigeria, as a country, is not relaxing with the compounding issue. She was doing her best to curb the menace of rapid population growth and to bring the issue under control. Some of her efforts include offering free contraception over the past ten years, and putting on steps to discourage people who are planning to have large family size (UN, World Population Prospects 2019). Figure 1.1 reveals the total number of undernourished around the world with Sub Saharan Africa being the worst hit by the problem.



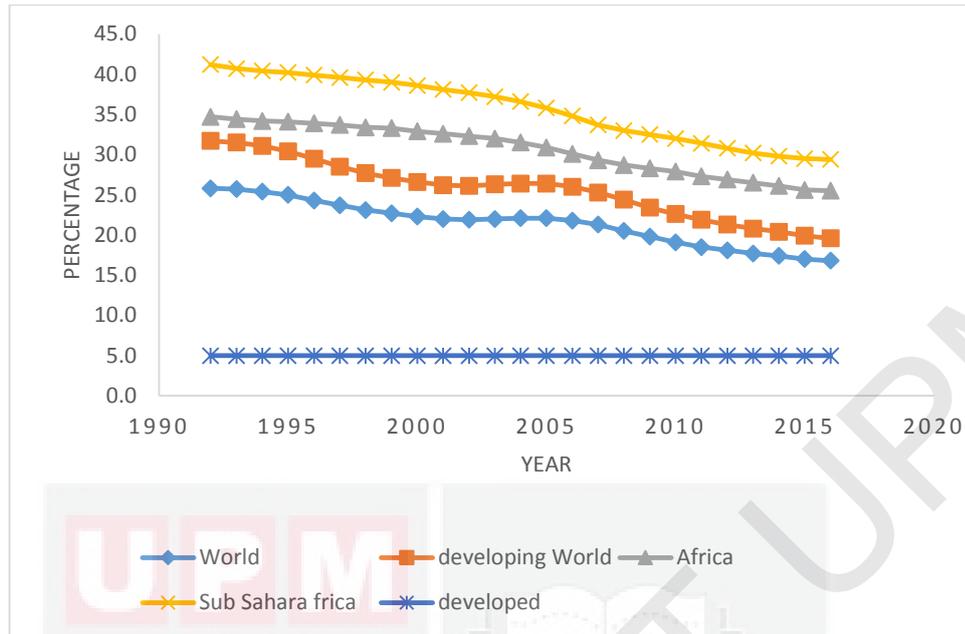
**Figure 1.1 : Number of the People Undernourished**  
 (Source : Author’s computation from FAO food security indicators Data 2016)

The concept of food security, as suggested by FAO, (1996), was characterized by four important aspects; they included availability, stability, access, and utilisation (World Food Summit, 1996). What normally determined these aspects of food security were the production of the food, income of the consumer and the prices of basic foodstuffs in the markets; also, included what was the level of producer supply, consumer demand and markets mechanism. From the other end, the government and international communities were checkmating excesses of the market. Thus, one major challenge confronting global food security was the serious decline in virtually all the aspects that were listed above. FAO, (2019) added that the risk of unwelcome trends in hunger, food insecurity and malnutrition as described so far, were to continue when considering the fragile state and worrisome outlook of the world economy. The present global economic prospects warned of slowing and stalled economic growth in many countries, including emerging and developing economies. Most regions rebounded after the sharp 2008–2009 global economic downturn, but the recovery had been uneven and short lived, as many countries have experienced generally declining trends in economic growth since 2011 which had crippled all efforts for the attainment of food secured society, especially around the developing countries of the world (Figures 1.1 and 1.2).

Figure 1.1 shows the number of undernourished people around the globe and it can be seen that the issue of undernutrition was more in the developing world and Africa or rather SSA, with virtually, nearly 0.02% found around developed world. There was strong evidence in literature that links undernutrition in child and adults to problems of household and individual food security (Kac-Velasquez *et al.* 2012; Gubert *et al.*, 2017; Joma'a *et al.* 2017).

A closer look at food security issues around the globe takes beyond hunger and malnourishment. About 17.2% of the world population, roughly 1.3 billion people, were also experiencing food insecurity at moderate level (FAO, 2019). This signifies that they also suffered some degrees of failure in accessing sufficient and safe food. Although they were not be classified as suffering from hunger, they were still exposed to greater risk of different form of malnutrition and unhealthy conditions. A combination of food insecure with those living at moderate level summed-up to a total of about 2 billion people in the world (FAO, 2019).

Figure 1.2 shows the prevalence of food inadequacy indicating that the SSA and developing world shared a lot of the burden. One reason that may be linked to the current state of the undernourished number around the globe which explained food security situation around the globe. The prevalence of food inadequacy as shown Figure 1.2 was seen to be logically parallel to the prevalence of undernourished but the procedure with which it was calculated differed. It was measured by using percentage of the population that were at risk of not covering their food requirements consistent with normal and physical activity, also, included are those that, although cannot be regarded as chronically undernourished, but were likely to be conditioned by food insufficiency.



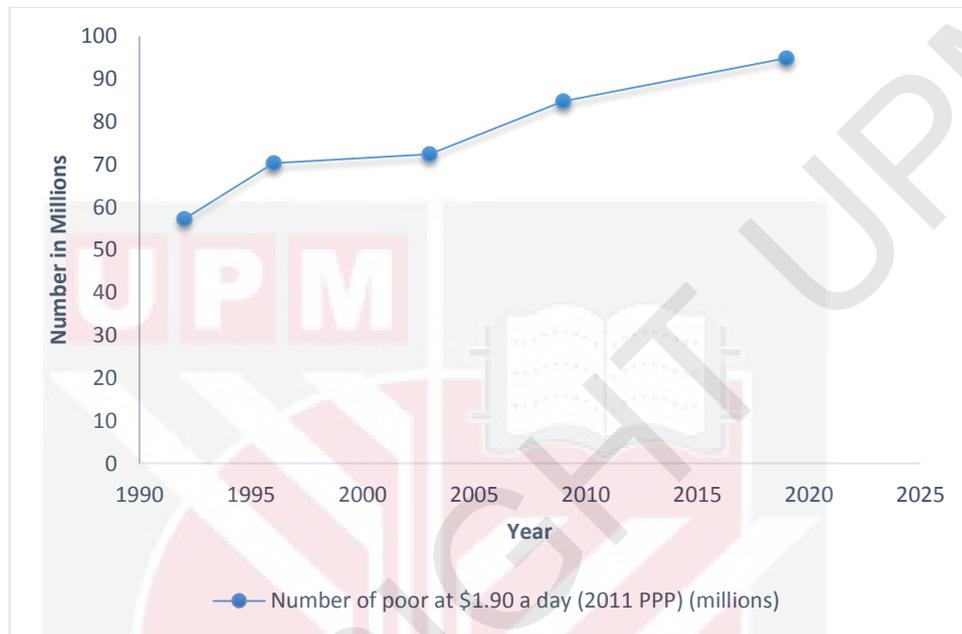
**Figure 1.2 : Prevalence of Food Inadequacy**  
 (Source : Author’s computation from FAO food security indicators Data 2016)

As prevalence of undernourishment was a good indicator of hunger, so was the prevalence of food inadequacy in the measure of food inadequacy in a population. Therefore, it was a valid and complementary indicator of assessing the multiple dimensions and indices of food security problems (FAO Food-Security-Statistics, 2016).

### 1.3 The Trend of Food Security Issues in Nigeria

The issue of food security remained one of the crucial issues in Nigeria despite series of food production and income intensification programmes executed by successive governments. Some of these programmes included Operation Feed the Nation (OFN), Green Revolution (GR), and National Special Programme on food security (NSPFS) FAO in Nigeria projects Country programming Framework (CPF), the Federal Government intervention in the Maximising Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) phase II which was a USAID programme, among others. Going by the targets and the anticipated outcomes of these programmes, the issue of food was supposed to have improved in Nigeria. But available records available revealed that more than nineteen percent (19%) roughly 36 million people of its population were still undernourished, despite being the most populous country in Sub-Saharan Africa, being blessed with human and natural endowment (FAO statistics, FAOSTA, (2016). This case may be worsened considering the trend of abject poverty in the country, projected to around 47.7%, of the teeming population living below poverty line of \$1.9 a day, roughly 95 million people (Figure 1.3).

Figure 1.3, as at 1990 records on poverty, revealed that 57.2 million Nigerian, about 57.1% of the total population were recorded to be poor. As the population increase in 1996, the poverty level also increased to 70.4 million people. The trend continued until 2019 when the population was around 199 million people, poverty rose to 94.9 million, nearly 50% of the total population, according to the world absolute poverty line (\$1.9 2011 PPP).



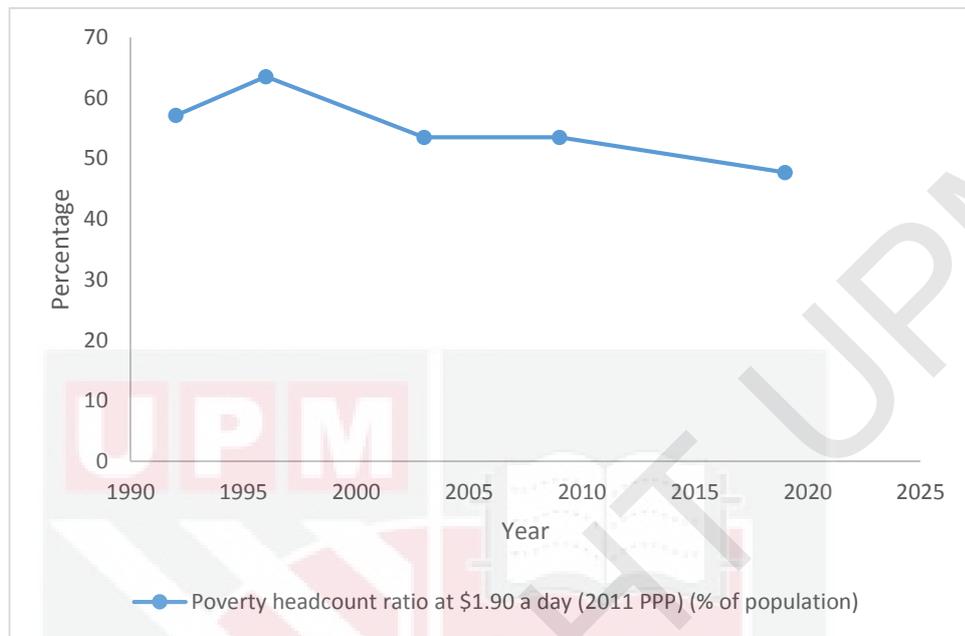
**Figure 1.3 : The Number of people living in Poverty with less than 1.90 a day and Population total in Nigeria**

(Sources : owners' computation from raw data available in WDI, 2019 )

Although the percentage of the poor was dropping as shown in Figure 1.4, the number of poor people continued to rise with increase in population. The knowledge of the poverty level in country became important in food security study at household level because it laid the basis for understanding the true position of household income level which best determined “access to food” which was also considered as the top priority in household food security study according to Chen & Kates, (1994) and Haddad *et al.*, (1994). Current report of World Data Lab’s Poverty Clock (WDLPC), (2019), indicated that, presently, Nigeria is the country that hosted the highest number of poor people after India. Invariably, it was obvious that the new position had great impact on food security of households in the country.

Figure 1.4 depicts the details of poverty trend from 1992 to 2019 showing how the drop in percentage of people living in poverty. In 1992, the poverty level was 57.1% and rose to 63.5% in 1995, after which the percentage depicted a decreasing rate. In 2000, the rate dropped to 53.5%, a rate that was maintained up to 2009 after which it dropped further to 47.7% in 2019. Although the percentage of poverty indicated a

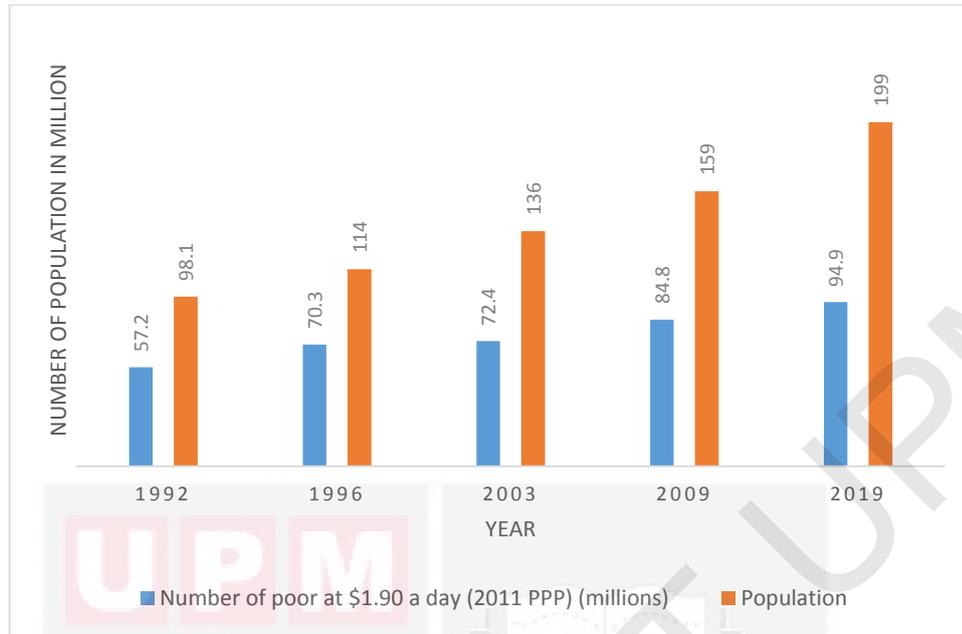
decreasing rate, the number of poor continued to file-up as the population increased (Figure 1.3).



**Figure 1.4 : Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population in Nigeria)**

(Sources : Author's' computation based on data available in WDI, 2019)

Figure 1.5 attempts to relate poverty increase with total increase in population. From 1992, records on poverty revealed that out of 98.1 million people, 57.2 million Nigerian were poor, that was about 57.1% of the total population. As the population increased to 114million in 1996, the poverty level also increased to 70.4 million people. The trend continued until 2019 when the population was around 199million people. Poverty rose to 94.9 million, nearly 50% of the total population, according to world's absolute poverty line (\$1.9 2011 PPP (WDLPC, 2019).



**Figure 1.5 : The Number of people living in Poverty with less than 1.90 a day and Population total in Nigeria**

(Sources : Author's' computation based on data available in WDI, 2019)

This is important because it elaborated more on the decrease in percentage of the poor with corresponding increase in the number of the poor people.

The next problem associated with food security problem was hunger. Hunger and food insecurity, as measured by the US. food Security Scale, were explicitly linked to scarcity in household resources (Normen *et al.* 2005). Table 1.1 shows a schedule for hunger ranking which contained the schedule for hunger score and what the score represented. From the schedule, it can be deduced that as hunger score increased, so did the problem of the hunger in the country.

**Table 1.1 : Global Hunger Index Score Ranking Schedule**

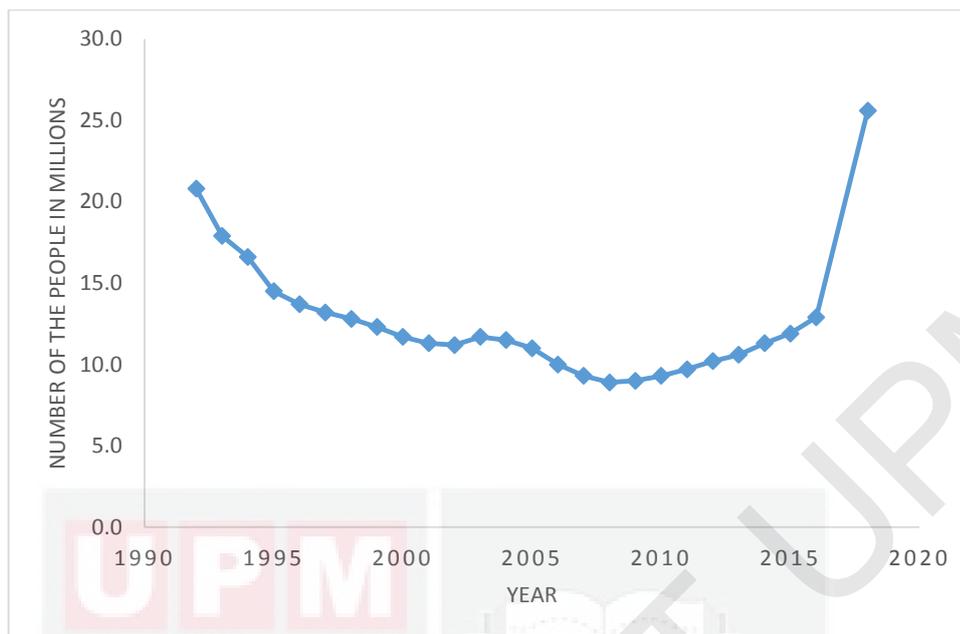
<9.9	10.0 - 19.9	20.0 -34.9	35.0- 49.9	50 -100
Low	Moderate	Serious	Alarming	Extremely alarming

Using the schedule, Table 1.1 attempts to explain the recent increase in hunger score for Nigeria from 25.5 in 2016, to 27.9 in 2019, (IFPRI, 2019) placing Nigeria at serious hunger level (20.0 – 34.5). The increase in hunger may not be dissociated with the ban on import food related items, without corresponding increase in local food source (Figures 1.13 and 1.14).

To further achieve the attempt of establishing issues concerning household food security in Nigeria, there was the need to examine some reports on food security indicators provided by different organizations around the world. For instance, recent reports (FAO, 2015; WFP, 2015), established the number of undernourished people in Nigeria have increased since 2007 from 8.8% to around 14.3% in 2016. According to WHO (2015) statistics, the proportion of children under five years of age, underweight and stunting prevalence had increased since 2008 which stood at 41%, in 2014 as against 35.1% reported in 1990. These figures gave an insight on the trend of deteriorating conditions that have been recorded so far. The fact still remained that a significant percentage of the population out there required further action in an attempt to ensure food security in the country.

The percentages of the undernourished members of the population in Nigeria are presented in Figure 1.6. The figures indicate that the issue of malnutrition in Nigeria was initially among the areas where major progress was recorded in an effort at achieving food security in SSA. It can be observed that the trend of undernourishment continued to decrease because of the contributions from different sectors and stakeholders in the fight against hunger and restoring food security. FAO, (2015), reported that Nigeria was among the few countries that was likely to achieve Millennium Development Goals (MDG) targets of 14% hunger reduction in 2015. But the trend started to assume a new shape since 2008, and that could link to many reasons among which were the global food price crises of 2008, the current activities of “Boko Haram” insurgency in the north and the Niger Delta militia in the southern part of the country. All these had destabilised peace, displaced citizens and suppressed the economy of the country (Obi, 2009; Chothia, 2012; Obi, 2009 and Aghedo, & Osumah, 2015).

Figure 1.6 depicts the number of people who were undernourished in Nigeria from 1992 to 2018. From Figure 1.6, the number of the undernourished had been on the decrease from 1992 to 2008, after which the trend assumed a new dimension. Undernourished figure continued to rise from 2008 which was 8.9 million to 9.3million in 2010 and 12.9 million in 2016. The number was even worse in 2018 recording 25.6 million people. This signified the need for actions in addressing the issue of undernourishment which was a symptom of food insecurity especially if narrowed to micro level.

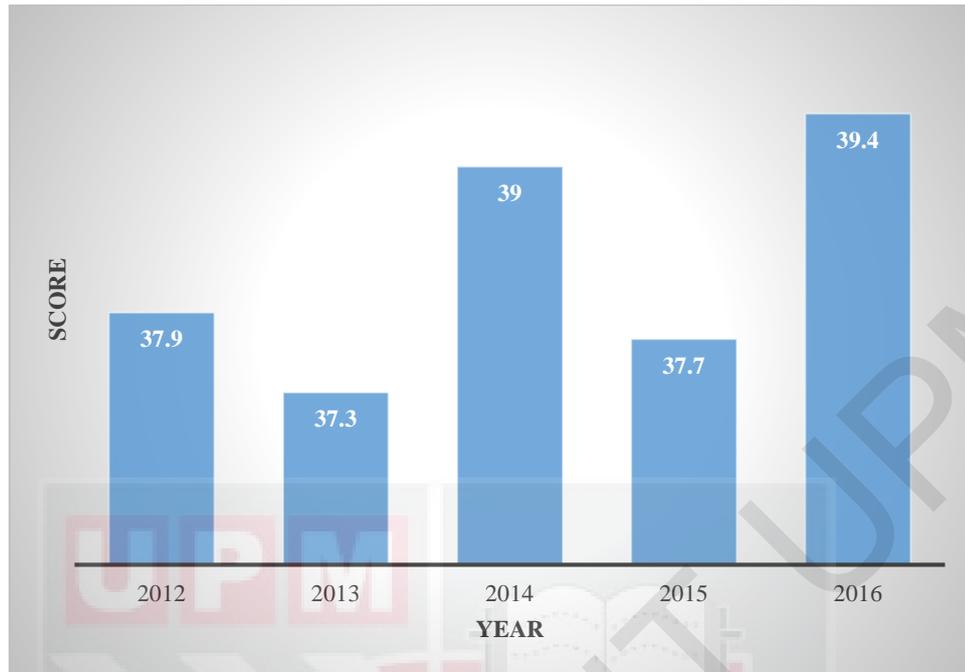


**Figure 1.6 : Number of the Undernourished People in Nigeria**

(Source : Author’s computation from raw data available in FAO food security indicators data 2016)

The governments have committed significant resources to support food security programmes in almost all the states in the country with the assistance from development partners (Oriola, 2009). However, despite these efforts, the issue of poverty still continued to prevent many household’s accessibility to adequate food which in turn exposed them to weak resilience “coping resilience” in cases of shocks.

According to the records of Global Food Security Index (GFSI) by DuPont, (2016), as shown in Figure 1.7, the score for Nigeria from the inception of the index to date had been between 37 to 39, for the periods of 2012 to 2016; thereby placing Nigeria at moderate level in terms of national food security status which required improvement. Accordingly, Figure 1.8 showcases the position of the country according to the ranking by score; out of 113 countries on their survey chart, Nigerian position had been between 88 and 93. These placed the trend of national food security in Nigeria at moderate level over a long period. According to DuPont categorization, a score of 100 to 75, was recognized as best performance, 75 to 50, was a good performance, 50 to 25, as moderate performance, and 25-0 as a range that needed for improvement. Establishing the trend of food security as a nation was important but not sufficient enough in addressing issues of food security at the micro level (household and individual) although led a base for understanding the state of the country. It did not identify true position on the current status of household which the research was set to address. It also did not identify areas of pressing need requiring urgent attention and those with mild and less severe problems.



**Figure 1.7 : Gross Score Score of Global Food Security Index**  
 (Source : Author's computation from available data from DuPont 2017)

Figure 1.9, shows performance indicators of food security, used by organisation for such concerns as availability, quality and safety, as well as affordability (access). According to the figure, availability, quality and safety, had been on a high grade of almost 50, while that of affordability (access) was often very low 21.4 to 24.2, indicating that the major cause of food deficiency in Nigeria was largely access. This may be explained by many reasons, like high level of poverty, income distribution and inequality among other issues. Availability and quality and safety performance were average. This may be explained by the level of production, imports and market sector. Also, as demand for goods existed, the suppliers were willing to provide to attain the markets benefits. The role of government, international and donor agencies were also a plus.



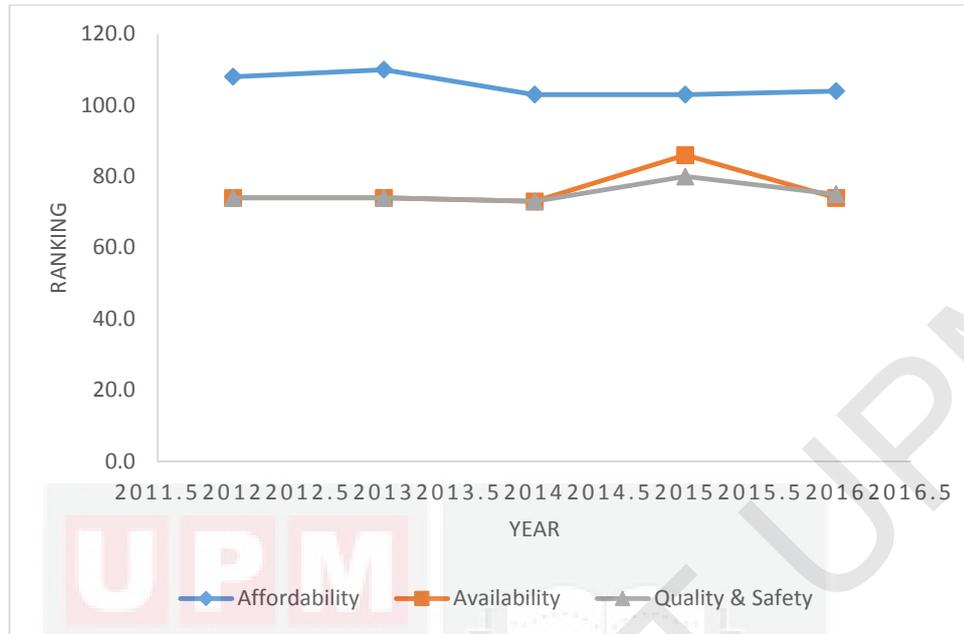
**Figure 1.8 : Overall Ranking of Global Food Security Index**  
 (Source : Author's computation from available data from DuPont 2017)

Figure 1.8 reveals the overall ranking of Nigeria amongst 113 countries on the survey chart. of DuPont organisation was 88 in 2012, 89 in 2013, 87 in 2014, a bit higher, 93 in 2015, and 90 in 2016. The relative change in the ranking among the countries can be explained by firstly, the overall score of the country, meaning when a country scored higher, it improves its position in the ranking. Secondly, when other countries performed better and one country did not change, it could result in a shift in position of both the performing country and the stagnating one. In Nigeria, the 2015 indicator score did not change but the resulting effect of improvement in other member countries in the survey list pushed Nigeria slightly backward from 88 to 93. In 2016, the performance indicator on availability had changed from 43.1 to 47.2 which caused the overall score to change from 36.7 to 38.4 of the country score leading to improvement in the overall ranking in the country. On the other hand, 2015 was the year for election and Nigeria as a nation, has suffered serious set-back from the activities of insurgent Boko haram, and Niger Delta militia (Chothia, 2012; Obi, 2009; Aghedo, & Osumah, 2015) Their activity had caused serious setback on Nigeria's most reliable export commodity (crude oil) and to the north, people were displaced in their millions leaving their homes and farm lands.



**Figure 1.9 : Affordability, Availability, and Quality and Safety Scores for Nigeria**  
 (Source : Author's computation from available data from DuPont 2017)

On the ranking, Figure 1.9 follows suit by establishing that the problem of the food security in the country was that of access more than other indicators. The country's access level to food, was placed at 104 out of 113 countries under the survey compared to other indicators at 80, 75 position although it was relatively poor but still better than the access score.



**Figure 1.10 : Affordability, Availability, and Quality and Safety Ranking for Nigeria**

(Source : Author's computation from available data from DuPont 2017)

### **Household Food Security Across the States from the Six Geo Political Zones of the Nation**

The household food security studies amongst states and across the South and Northern geo-political zones in Nigeria, is yet another area largely un covered. From available literature, what is obtained are independent studies scatted across different states in the nation. Some of these studies include, from the Northern States, Ifeoma & Agwu, (2014) in Kano, Mukhtar (2018) in Niger, Abubakar, (2013) Gombe, Abu and Soom, (2016), Benue state and Babatunde (2007), covering Kwara state. And from the southern part, we have studies like, Fawole et al., (2016), in Osun, Ibok et al. (2014), Cross Rivers, Omonona and Agoi (2007), Lagos, and Oni, (2008) Oyo state. One of the common features among these researches is their small sample household size largely few enumeration area or local authority which makes their conclusion largely not sufficient enough for policies that may cover the whole nation.

Another important parameter that could explain the angle of economic and social imbalances between the two regions. The south happens to be much richer and blessed with more socioeconomic indicators when compared to its northern counterpart (Akpoilih & Farayibi, 2012, NBS, 2010). The widening gap between the two parts of the country is evident from gaps in socio-economic opportunities between the two ends of the country. Thus, as at now there is rarely available literature that established household food security across states or regions in the nation what is obtainable is only the national food security with some scattered household records across state. But no explanation on household food security status across states and region, and where and by how the state or region is lagging behind and which area is requiring attention. A

quick look at the household food security across the states from the six geo political zones will reveal the existence dispersity in food security status across different states and parts.

### **1.3.1 Households' Food Security Issues in Nigeria.**

The effect of poverty, hunger, undernutrition and deteriorating food security, had rendered most of the poor household hopeless, as more than 70% of the total of their disposable income went to servicing food requirements, according to NBS 2017, World Bank, (2017), This could explain the reason why the target of achieving the 2015, 14.5% hunger level in Nigeria, had not been anywhere possible by (Kanayo, 2014). Babatunde *et al.*, (2010), reported in their study on food security, that more than 70% of the populace were affected with food security issues and lived in poor households and could not afford access to food for healthy and productive living. However, tracing the sources of food supply and its demand among households in the country assisted in understanding the issues more.

#### **1.3.1.1 Food Supply to Households (Availability and Stability of Food) in Nigeria**

Food is made available to household in Nigeria largely through agricultural production and market, with the balance coming from import sector. Beginning with agricultural produce, there are many publications that link agricultural sector with food security in Nigeria especially at household level, (Ajani *et al.*, 2008; Nwankwo, 2013; Ibok *et al.*, 2014). One of the challenges posed by the neglect of the agricultural sector was its inability to supply food requirements for the growing population and the large dependence on imported food.

To address the issue of food supply shortages, the issue of food self-sufficiency takes priority. Food self-sufficiency is an often-used term. The FAO (1999) defined food self-sufficiency at country level to mean: "the extent to which a country can satisfy its food requirements through its own domestic production." This definition, as a country providing adequate food to meet its own needs, is how people typically conceive the idea of self-sufficiency in food to mean. Yet, some parts of it still remain unclear. It is fuzzy because, it is not clear as to whether a country that pursues self-sufficiency in food can still participate in trade with other countries. Determining how trade fits into individual countries' food self-sufficiency policies, requires further refining of FAO's concept definition and clarifying how it can direct government policy choices.

Many researchers describe food self-sufficiency as a country that prevents all trade in food and relies 100% on domestic food production to meet their food requirements. This concept can be seen as a country that closes its borders and adopts complete control over its food sector. Policies like this, in practice, are very rare. All countries must rely on imports for at least one or two of their food needs, including the large food exporters that produce far more food than they eat. Even the country with strict

policies, North Korea still imports food and recognizes international food assistance (FAO, 2015).

Given the prevalence of trade in the global economy of today, a more pragmatic understanding of food self-sufficiency is domestic food production equal to or exceeding 100% of the food consumption of a country. In this definition, trade is not excluded, because food self-sufficiency is characterized by the ratio of food produced to food consumed at the domestic level. Understood in this way, food self-sufficiency does not necessarily focus on whether the particular foods are being produced, but on the ability of domestic food production in a region. Thus, under this definition, a degree of agricultural specialization may still be pursued by self-sufficient countries to trade some foods with other countries. The key point is that countries that are self-sufficient in food produce an amount of food that is equal to or greater than the amount of food they consume. A key indicator reflecting this more realistic understanding of the concept is the self-sufficiency ratio (SSR), which applies to food production as a supply ratio as shown in the following equation (FAO, 2012).

$$SSR = \text{Production} \times 100 / (\text{Production} + \text{Imports} - \text{Exports})$$

*SSR = Self-sufficiency ratio*

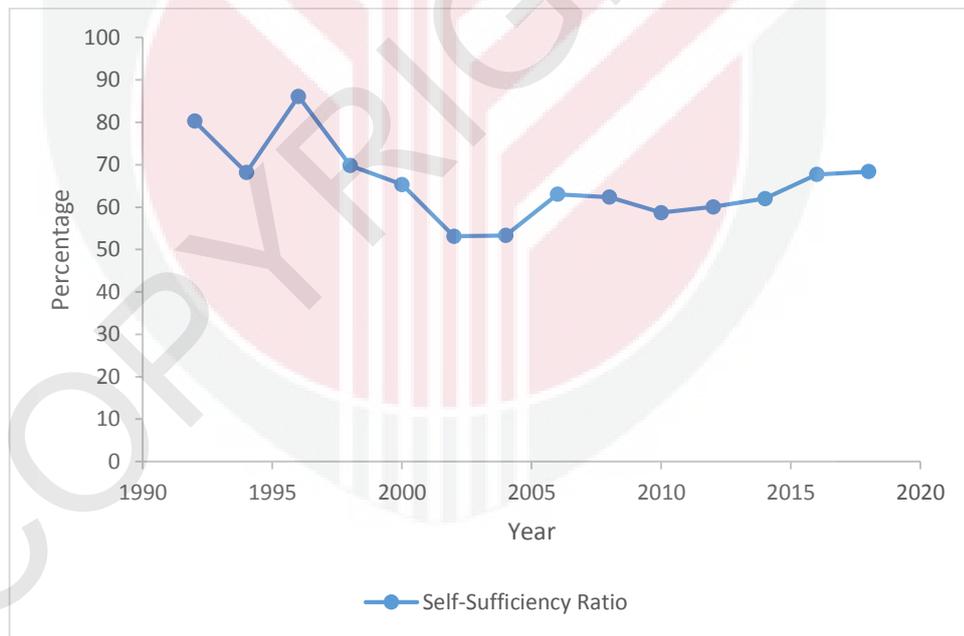
Further redefinition of the SSR may include fluctuations in the level of domestic food stocks (Puma *et al.*, 2015). The SSR can be expressed either in calories or in a country-produced volume of food, although it can also be determined on the basis of monetary values. Usually the SSR is determined for a particular commodity or commodity class such as rice, wheat, maize, or cereals. The FAO advocates caution in applying the SSR concept to a country's overall food situation, as it may mask instances where a country produces abundantly one food commodity while depending on imports for other food commodities (FAO, 2012). Some SSR analyses concentrated on main staple crops, such as cereals and starchy roots, so that food self-sufficiency was approximation of food self-sufficiency of a country, (Porkka *et al.* 2013).

The food self-sufficiency debate is often cast as one where economic reasoning and political imperatives clashed. On the one hand, food self-sufficiency advocates were defending states' political right to separate themselves from the vagaries of world food markets by growing their reliance at domestic food production. On the other hand, critics argued that there were high costs in setting their food policies for states that favour political over economic considerations.

Part of what makes food self-sufficiency a complex topic was that different countries were facing different situations that made it very difficult to generalize policies. For instance, some countries at country level that were more than self-sufficient in food can still had high levels of hunger and malnutrition among their population example, India, Tanzania, Guinea, Cambodia, Malawi, Chad, and Zambia (FAOSTA, 2016).

Countries in this situation may produce more than enough food crops, but too little was needed for a healthy diet. In some self-sufficient countries, high levels of poverty could hinder access to food for certain segments of the population. Many sovereign countries, on the other hand, had little trouble in ensuring that their populations had sufficient and adequate access to adequate and nutritious diet example, Canada; Australia; United States; Russia (FAOSTA 2016).

Some countries with SSRs well below 100% may have no problem securing adequate food supplies for their population by relying on international trade. For example, high-income countries can afford imported food easily, even when food prices were high and/or volatile on the world markets example, Japan, South Korea, Greece, Italy, Mexico, Kuwait etc. But it may be very difficult for other countries with SSRs below 100% to obtain adequate food imports for their population if the poverty level was very high. Each country faces a unique set of circumstances relating to its ability to order food for its population, depending on its productive capacity, its ability to import food and its ability to distribute food equitably domestically (Clapp, 2015a). Nigeria's SSR was below 100% and the level of poverty was very high, hunger was above 25%, combined with a weak currency base in terms of foreign exchange rates, making it difficult for the country to meet its import requirements. Figure 1.11 shows the case of Nigeria's SSR with regards rice commodity.

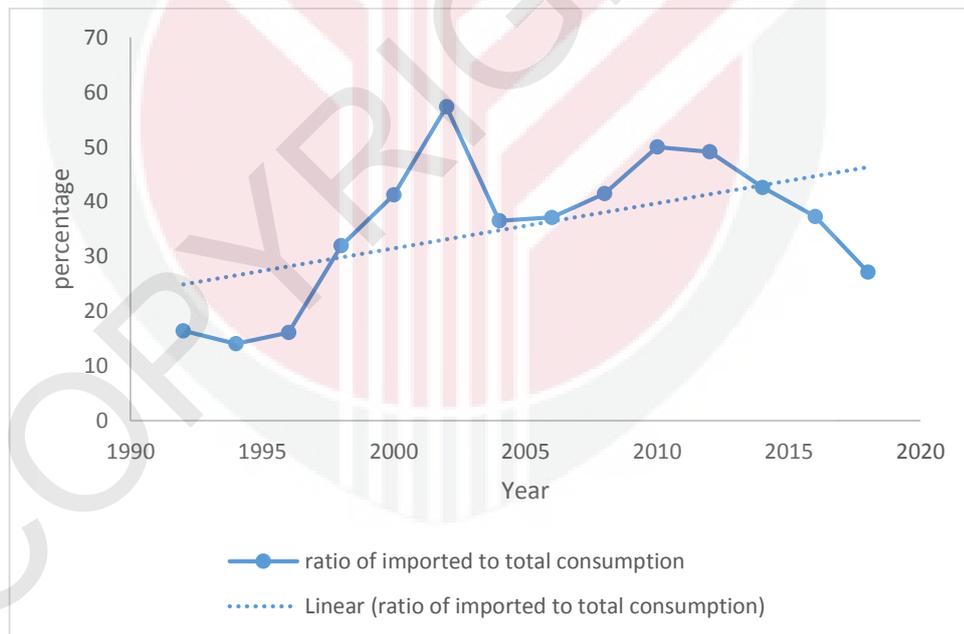


**Figure 1.11 : Self-Sufficiency Ratio of Rice Production in Nigeria**  
(Source : Author computation from available data from Indexmundi, USDA2019)

From Figure 1.11, data show that self-sufficiency level of the country had been very high 1994-1996, at around 86%, but from that year to 2004, it has been declining. This can be explained by the outcome of the green revolution that brought many countries like (Vietnam and India) in to world rice market and low prices that prevailed on the

same market. But from 2006-2014, it remained steady at around 60% (see Figure 1.11). This was because the country suffered from many issues like global food price crises 2007-2008, economic meltdown that caused the price of crude oil to go down affecting the main source of revenue to the country, and the downfall in the currency rate compared to other intentional currency. All these reasons forced the government to stage a downturn in the process of improving self-sufficiency in rice production. This could be reason why there was a slight increase in 2016 - to date and the struggle continued. But this improvement, was not enough to guarantee food security because there was still large portion that had to be filled-up with other sources.

Over the years, the growing food importation coupled with escalating rate of foreign exchange have exerted a huge burden on Nigeria's foreign reserve which could have been invested in other more beneficial areas of the economy (Oyovwi, 2012). Nigeria, was associated with a more rapid increase in rice dependency level. This dependency was also supported to a large extent by the low rice price that prevailed on the world market with the emergence of new Asian exporting countries (Vietnam and India) as an outcome of their successful Green Revolution. At the beginning of the 2000s, the rice dependency ratio was close to 41% and then stabilized at 40–50% with the recovery of West African production, but without a decline of importation level, even after the 2008 price surge.



**Figure 1.12 : Imported Ratio to Total Rice Requirement for Consumption**  
(Source : Author computation from available data from Indexmundi, USDA.)

The Figure 1.12 depicts imported rice dependency ratio that was the share of imported rice in total consumption which increased from less than 31.9% in 1998 to an average of 57.3% in 2002s (Figure 1.12). This was not, however, a linear trend: its upward and downward trends and may be as a result of climatic conditions and changes in the

policy environment, which may be more or less favourable to the production of local rice. The level of rice dependency was also the outcome of a lag between the speed of changes in rice eating habits and the capacity of the local rice supply to respond.

The food and drink import bill rose from N3.474 billion in 1990 to N195.814 billion in 2001; this trend had not yet changed (NBS, 2015). Another report from same NBS (2018) stressed that the amount of money the country had been spending on importing food and drink increased from 2015 to 2017, and dipped in 2018. It was pointed that, if the trend from the first quarter of that year continued (2018), the bill will go up again for the year. Nigeria spent nearly US\$2.9billion, in 2017 and had risen to US\$4.1billion (NBS, 2018). These worsening patterns raised a fundamental question about how much longer the nation can keep up with the practice of food import. Apart from the drain which food import constituted to Nigeria's foreign exchange reserve, there was the weakening of the economy that arose from problems of imported inflation (Oriavwote, & Eshenake, 2012). Table 1.2 shows food importation and escalating foreign exchange, as it consistently eroded huge sum of the country's dollars which could have been utilised for the other development purposes.

**Table 1.2 : The Food and Drink Import with Cost in Naira and Dollar 1990-2017**

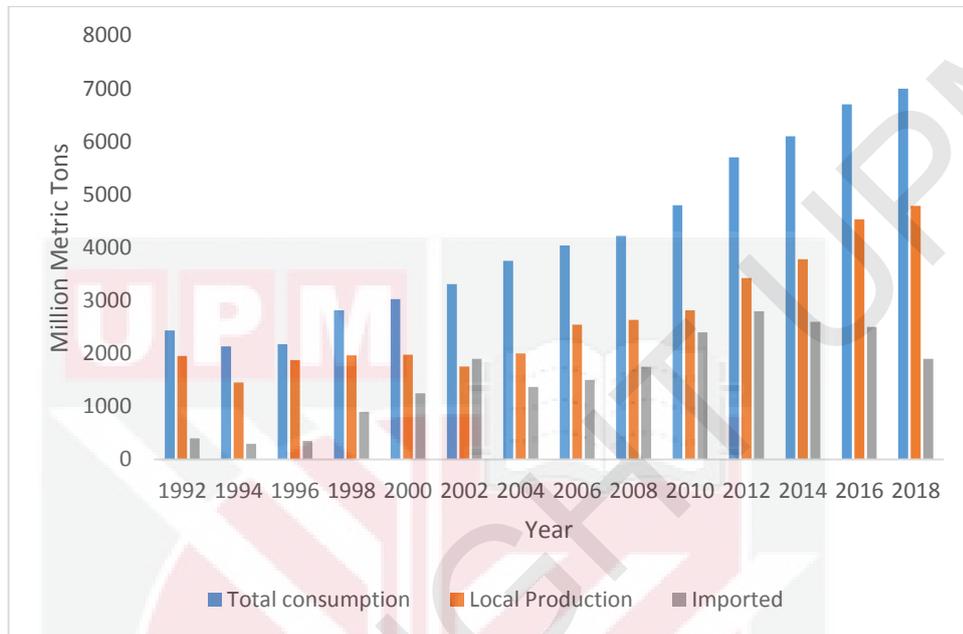
S/NO	Commodity	Year	Nigerian currency (billion)	US Dollar (billion)	Exchange rate US Dollar to Naira
1	Food & drink	1990	3.474	0.043	1: 80
2	Food & drink	2001	195.814	1.521	1: 128.7
2	Food & drink	2015	560.57	2.9	1:193.3
4	Food & drink	2017	1.476	4.1	1: 360

(Source : National Bureau of Statistics Bulletin, 2018.)

Table 1.2 indicates the cost of importation of food over the years and how the exchange rate engulfed huge amount of money through importation. From the table, 3.474 billion was spent on food and drinks in 1990, that is 0.043 billion dollars but as the exchange rate began to rise in 2001, 1.1521 dollar amounting to 195.8 billion naira because of the exchange rate. The amount rose even higher in 2017, when the dollar rate was 360 naira as against the rate in 2015 (N 193.3). the amount rose to 1. 476 trillion naira in 2017.

Figure 1.12 showcases the means through which rice was made available to the population. It indicated that the rice supply was largely through local means from 1992 to 1996 this could possibly be, firstly, because the population was not very high compared to what it is today, and secondly, because the exchange rate was also not too high. But after 1998, the importation continued to grow year in and year out. This may not be a problem if the comparative advantage of such action were to the benefit of importing country. But, on the contrary, since the global financial crisis, marked by the fall of respected and large financial institutions in the world's major industrial regions. Since then, this had become a global economic crisis, with varying degrees of reporting ripple effects on almost every country around the globe. This had resulted

in a sharp and massive fall in commodity prices, especially crude oil the nearly single Nigerian foreign exchange earner, and Naira depreciation. Nigerian currency also depreciated sharply against the world's US dollar and other major currencies. The drop in oil prices put pressure on external reserves, which led to the depreciation of the naira (Lawrence, & Cookey, 2010).



**Figure 1.13 : The Total Rice Consumption in Nigeria**

(Source : Author computation base on available data from Index mundi, USDA, 2019)

Thus, making importation of food generally exerted a huge burden on Nigerian economy, a reason that posed the government to assume a new turn on policy on food importation (Yagboyaju, 2019). From 2016 to 2019, government had been making effort to control the importation as can be seen from Figure 1.13. A slight improvement was also seen on local production but that was not enough to guarantee smooth take-up on the banned on the food product. However, household food supply also suffered tremendously from both actions during importation and banned of it. Before the official pronouncement of the banning exercise, so many things were happening which included importation of some food items like, (rice, frozen foods, etc). Many food items of all kinds came into the country unchecked (Bensassi, Jarreau, & Mitaritonna, 2016). The nature of Nigeria as an African country heavenly known for their weak policies and corrupt tendencies as proclaimed by Clover, (2003), allowed for all sort of food both good and expired to penetrate through our borders unchecked. This has the implication of bringing health related diseases to the people who were detrimental to food security. After banned without prompt measures to cater for already existing mouth to feed had degenerated into a looming hunger, skyrocketing prices and crises between the authorities and smugglers of food items who were attempting to fill in the gap created by the banning (Nduka, BBC News, Lagos, 2019).

Fertiliser which was seen to be a catalyst to agricultural production in Nigeria had also faced a major setback. The total fertilizer procurement annually as disclosed by the Ministry of Agriculture was around 1 million metric tonnes as against the required estimate of about 3.7 million metric tonnes (Adesina, 2017). The application of fertilizers had been far below the world's average recommendation for application i.e. 100kg per hectare, while in Nigeria it was 13- 20 kg per hectare, which often resulted in low crop yield and low income to farmers (Tell, 2008; Adebayo & Ojo, 2012). This no doubt had tremendous implication on food security.

Last, but not least, is the issue of climate change in the country, which had greater impact on different geographical zones in the country. It affects both the physical and economic access to certain food varieties. There was evidence that Nigeria was already confronted by a number of ecological issues directly related to the continuing climate change (Adefolalu, 2007; Bello *et al.* 2012). Nigeria's southern ecological area, mainly known for heavy rainfall, was facing variability in the pattern of rainfall, while Guinea savannah was experiencing rising temperatures gradually. The Northern Zone faced the risk of desert encroachment at a very rapid pace per year due to a rapid decrease in the quantity of surface water, flora and fauna. Nigeria's northern region was rapidly becoming an arid area at a very fast rate per year due to a rapid decrease in the quantity of land-based surface water, flora and fauna resources (FME, 2004; Adejumo, 2004; Obioha, 2008 Ayinde *et al.* 2011). A consistent decrease in rainfall resulted in a decrease in the rate of natural soil resource regeneration (Fasona & Omojola, 2005).

The patterns of rainfall changes, leading to extreme occurrences such as droughts, floods, and forest fires were becoming more frequent, resulting in bad and unpredictable returns to farmers, making them more susceptible, to hunger and malnutrition and food insecurity according to the United Nations Framework Convention on Climate Change (UNFCCC 2007; Bello *et al.*, 2012). There was prediction that crop yield in Africa may fall by 10-20% by year 2050 or even up to 50% due to climate change (Jones & Thornton, 2003; FAO, 2010)

Resources of poor farmers therefore faced the prospects of tragic crop failures which reduced agricultural productivity, increased hunger, poverty, malnutrition and diseases (Obioha, 2009; Zoellick & Robert 2009). Due to these environmental threats resulting in decline in crop yields, some farmers in Nigeria were abandoning farming for non-farming activities (Apata *et al.* 2010). Hence, concerted efforts towards tackling these menaces were urgent and necessary.

There existed a volume of literatures on climate change in Nigeria, that acknowledged the impacts of climate variability and its effects on undermining the efforts of many rural poor households from engaging in to a more meaningful agricultural production (Ozor, *et al.* 2013; Ebhuoma, *et al.* 2017). Moreover, it has also been argued that climate variability had the potency of bringing down the contributions of rural agriculture in economic growth and national development (Vermeulen, *et al.*, 2010; World Bank 2016).

Recent development in Nigeria was the crisis in the North-east, which had forced some of crop farmers and cattle breeders to abandon their farms and migrated to the nearby countries like Niger, Cameroun and Chad. Nigerian Emergency Management Agency (NEMA), (2015), and Emmanuelar, (2015), in their reports stated that about 65% of rural households, mostly farmers in the northeast had migrated to the south. This was due to the constant attacks on them and their animals by insurgents and cattle rustlers popularly known as “Boko Haram”. The agency reiterated that the country continued to suffer from famine and other related vices if the trend persisted; this was because most of these farmers both mechanized and small-scale from the northeast were threatened by terrorist attacks. Among the commodity they produced were beans, pepper, onions, maize, livestock, rice and catfish from Lake Chad. The agency warned about the impending famine of countrywide food crisis that may loom, taking into consideration the NEMA’s disclosure. This because most of the foodstuffs consumed and traded in the country were grown in the northern part of Nigeria.

### **1.3.1.2 Households Demand for Food (Access and Utilisation of Food) in Nigeria**

Nigeria as a developing nation, was characterised by indices of poverty, corruption, unemployment (Enope & Acha, 2017; WDI, 2019; Hope, 2017; NBS, 2010). This had direct bearing on household income and income distribution and also exact greater influence on their purchasing power and economic access to food demands. Similarly, the issue of global food prices, which in recent years had risen dramatically as not much hope was attached to the anticipated reverse of the trend, had further aggravated the suffering of masses in the country (FAO, IMF & UNCTAD, 2011; WDI, 2017). Prices in Nigeria exacted a serious impact on household food security as many in Nigeria relied solely on market for food thus could hardly avert the effect of higher prices (Emokaro & Ayantoyinbo, 2014; Ayinde *et al.*, 2015).

Most households in developing countries were net buyers of food items, and therefore were vulnerable to shocks in the prices of staple foods which could impliedly put the household food security at risk. Therefore, in order to prevent future food crises and achieve zero hunger by 2030, as part of one of the Sustainable Development Goals (SDG), targets, was explicitly aimed at limiting extreme food price volatility. Although, globally induced price volatilities had received most of the attention lately (e.g. von Braun & Tadesse, (2012); Ivanic *et al.*, 2012), households around Sub-Saharan African (SSA), often faced much larger nationally and regionally induced food price fluctuations. These latter volatilities stemmed from unpredictable markets and constituted one of the major obstacles to overcoming subsistence-oriented agriculture in Africa (Fafchamps, 1992). Also, such unpredictable markets behaviour was often linked to too-much government involvements in trade policies affecting food markets and extensive engagement through marketing boards or strategic grain reserves (Poulton, 2006).

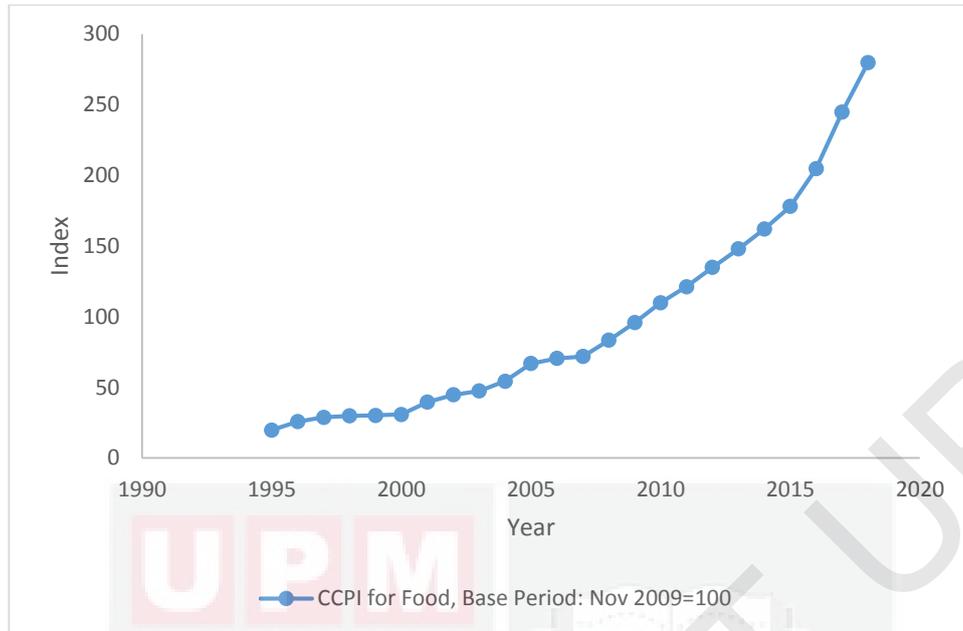
In Nigeria, majority of the households largely depended on market for their food supply and thus remained vulnerable to shocks of high food prices (Abu, 2012;

Ifeoma, & Agwu, 2014). The issue of high prices often affected the cost of input which in returns reduced yields and production levels. It also affected the quantity and variety of food stuffs that the household can demand for which can have direct impact on household food security, (Ifeoma, & Agwu, 2014; Anugwa & Agwu, 2019). The food price surge also had a direct impact on overall inflation because the weight of food in the consumption baskets was high. The high global agricultural prices did not appear likely to fall to 2000 to'03 levels, and fluctuations may be even higher, according to the global scenario analysis of the International Food Policy Research Institute (Von Braun *et al.*, 2012).

The surge in food prices had been transmitted in varying degrees from international to local markets, thus, governments of developed and developing countries, as well as the international organizations had to play key roles in reducing and stabilizing prices by assisting in urgently needed trade and investment actions and in complementing the poor people to cope with higher food bills through social protection. The sharp increase in food prices over the past couple of years had raised serious concerns about food and nutrition situation of people around the world, especially the poor in developing countries; about inflation; and in some countries about civil unrest. Although the relative influence of various factors on global food price inflation remained somewhat open to discussion and debate, the underlying causes were increasingly well-understood and noted at the highest policymaking levels. Many low-income countries exposed to food price increases already had high rates of child undernutrition, and it was likely that these will be exacerbated. The immediate impacts of food price increases on household food consumption and nutritional status were well-understood.

However, households around developing countries dearth of good storage facilities to store the harvested food crops were tied with high transport costs, insufficient market infrastructure, weak institutions and support services, ineffective diversification and reduced vertical integration, harsh environmental factors, poor infrastructure, inefficient or inadequate use of modern inputs and poor crops continued to restrain the market supply for food items (FAO, IFAD, & WFP 2011).

When dealing with issues of household food security among developing countries, it was important to particularly understand the behaviour of cereal prices as it differed from the prices of meat, dairy, fruits, and other foods. This was because cereals and vegetables constituted the most important part of the expenditure on food items for the poor and food insecure households. FAO, IFAD, and WFP (2011) reported that such category of food type accounted for over 50 percent of their dietary energy supply, as 20 to 25% of total expenditures of the people in the bottom quintile of the income distribution in Nigeria. Figure 1.14 showcases the behaviour of the composite consumer price index of food item in Nigeria over the years.

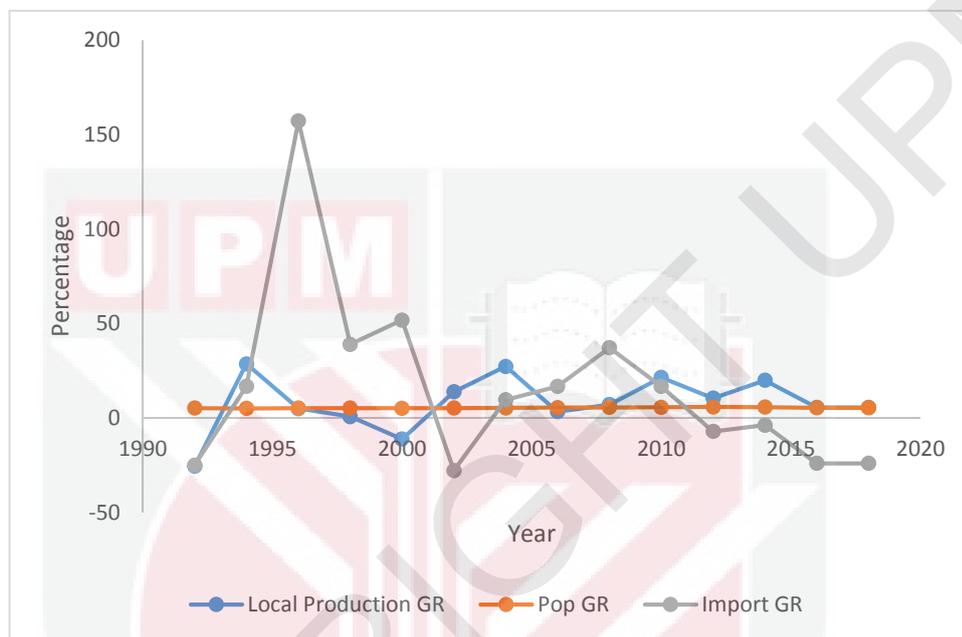


**Figure 1.14 : Composite Consumer Price Index for food in Nigeria**  
 (Sources owners' computation from CCPI and inflation data CBN annual report 2019, NBS, 2019.)

Figure 1.14 indicates the consistent increase in the manner with which price of food items chopped away consumers' income there by reducing his access power to variety of foods that could promote their food security. Monetarists were unarguably of the opinion that "inflation was always a monetary phenomenon arising from an increase in the quantity of money relative to output", and therefore, prices tended to rise when the rate of inflation in money supply was higher than the rate of increase in real goods and services production. Imported inflation, on the contrary, resulted from international trade in which inflation was transmitted from one country to another, especially during periods of rising worldwide prices (Anyanwu, 1992). Such paradigms supported some of the reasons why Nigeria had a high inflation rate. The increase in food inflation indicated that border closures may have played a role in higher prices being temporarily pressurized," said Standard Chartered chief economist, Razia Khan.

Population growth greatly increased the amount of food needed to adequately feed Nigeria's people. The bearing was how to secure the supply of sufficient and hygienic food at relatively lower possible cost. Similarly, the population increase in the country, which was estimated to be around 197, 379, 487 (Worldometers, 2018) as the trend was persistently on the increase. Taking the previous records, from 1991 to 2006, the population was 88.9 million and rose to about 150 million in 2006, (an increase of about 30 million people within a decade) and another increase of about 36 million from 2006 census to 2016. Going by this development, what will be the case of a nation that heavily relied on food importation for nearly 4 decades, even if the trend was maintained, roughly an increase of about 120 million or more. Thus, the forecasted population was about 402 million in 2050 (U.S. Census Bureau, 2019). The

forecast was based on 3.5 children to a woman, UNPD (2011) which was not likely to be true going by the current fertility of 5.5 children to an average Nigerian woman especially around the north, (WDI, 2019). Definitely placed more pressure on demand for food unless serious measures were put in place to avert the situation, especially weighing the current trend of agricultural production, the effects of climate change, huge dependence on imports and escalating foreign exchange rate. Figure 1.14 indicates a ratio of rice production to population.



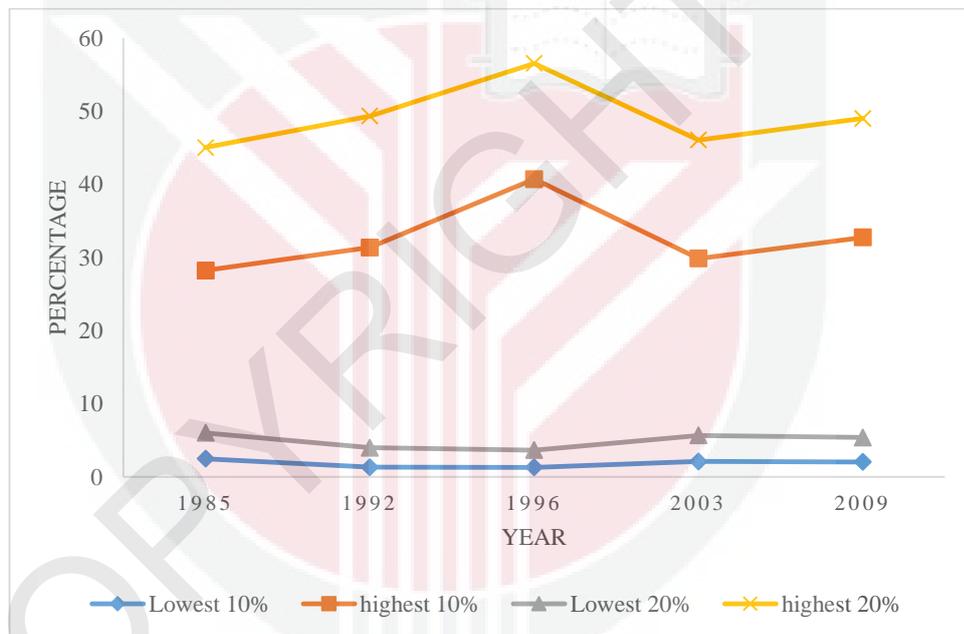
**Figure 1.15 : Percentage Rate of Growth in Local Rice Production, Imported and Population**

(Source : Author's computation from available data WDI, 2019; Index mundi, USDA, 2019.)

Figure 1.15 indicates that rise in rice production was at its peak around 1996 at 28.4% and suddenly continued to fall with a significant increase in portion coming from the import sector which grew to about 157.2%. This dependence was also largely supported by the low rice price that existed on the world market as a result of the success recorded in the green revolution campaign, coupled with the emergence of new Asian exporting countries (Vietnam and India). The situation continued until 2000 when it began to switch to a new direction with increase in production growth and a fall in the import. This happened because of market liberalization and macroeconomic adjustments in the 1990s aimed at strengthening the local supply of tradable goods, rice inclusive, and reducing the food deficit (Diagana *et al.*, 1999). This had been the case until 2006. The country import dependence continued to grow at an increasing rate until 2008 when there is a heavy downturn that affected the whole world economy. Nigeria was no exception. From where 2008 the rice importation continued to slow down for many reasons like, the price of rice surge of 2008, during that time, there was a threefold increase in the world price of rice within a few weeks. Therefore, in an attempt to revitalize the local rice sector and to ensure rice security in

food-deficit countries, an issue of rice import tariff was added on the policy agenda for supporting the local rice production. These, particularly the case among West African states governments, put in place a new or strengthened development programs for local rice production (Demont, 2015). While these policies introduced just before or after the price increase led to 4.6% annual growth in rice production at regional level between 2000 and 2012 (USDA FAS, 2013).

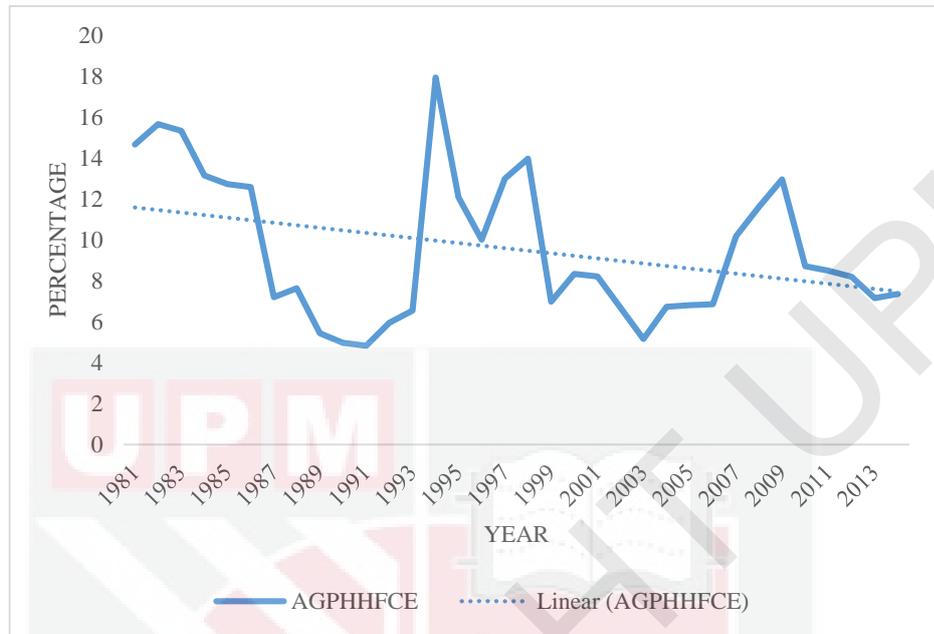
Patterns in rice production across countries have varied. Production witnessed a steady growth. However, one important issue of significance was the steady increase of growth with an average of 5%, without corresponding increase in food. This clearly explained why hunger existed, some segments of the population were undernourished and the deficiency in the production of food. And indeed, this will no doubt spelled risk to food security of the population of the country now and the near future. Figure 1.16 indicates the pattern of income distribution among households in Nigeria from the lowest 10% to highest 10% as well as the lowest 20% the highest 20%.



**Figure 1.16 : Percentage Share of Income that Accrue to Each Group in Nigeria** (Source : Author’s computation from available data with FAOSTA food security indicators 2016)

Figure 1.16, depicts income distribution patterns among the households in Nigeria. It shows the amount of income available to households for consumption and upkeep. From the graph, it clearly shows that income of lowest 30% of the population was so small because did not constitute up to 7% of the total country’s income, and a negligible portion of 10% shares up to 40% of the country’s wealth. This shows the wide gap between the rich and the poor and confirms the assertion that over 70% of poor’s income goes to servicing food requirement as reported (World Bank, 2017). To reiterate on this stand, the graph on household consumption expenditure had also

indicated a decreasing rate over time on the average except for few years of 1994, 1999 & 2009 respectively. Figure 1.17 elaborates more on this.

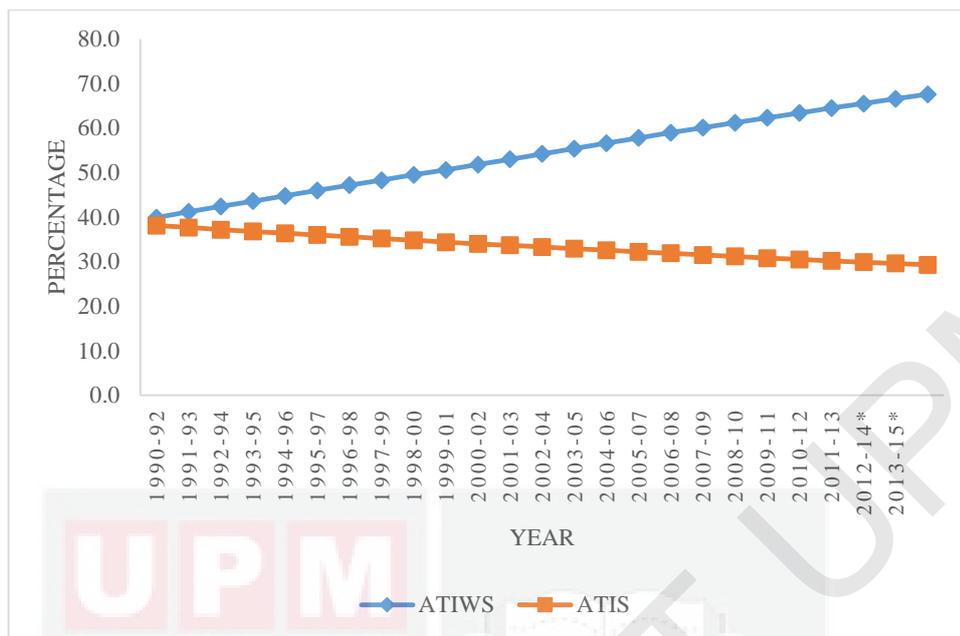


**Figure 1.17 : Annual Percentage Growth of Household Final Consumption Expenditure**

(Source: Author's computation from available data with FAOSTA food security indicators 2016)

Another issue of significance regarding household food security was access to good water and improved sanitation facilities among households. Water shortages reduced production and had an adverse effect on food security. Irrigation had helped boost farm yields and productivity in semi-arid and even arid environments and stabilized food production and prices (Rosegrant and Cline, 2003; Hanjra *et al.*, 2009a, 2009b) and agricultural sector revenues (Sampath, 1992). It was also important to include sanitation and nutrition in food security as it had evolved over time. The emphasis on sanitation and nutrition added to the definition of food security the aspects of caring activities, health services and safe environments.

In Nigeria, although water is improving (Figure 1.18,) a significant percentage was not privileged to enjoy such services especially those in rural areas (Nwankwoala, 2011; MDG 2014). Also, poor sanitation was one aspect detrimental to achieving household food security.



**Figure 1.18 : Access to Improve Water System (ATIWS) and Access to Improve Sanitation (ATIS)**

(Source : Author’s computation from available data FAOSTA, food security indicators 2016)

Figure 1.18 indicates that the result of improving sanitation in the country was generally poor and reducing with time and this a serious setback on household food security of the country.

In an attempt to overcome household food security problem by different administrations, international organisation and donor agencies, series of programmes and projects aimed at combating the problem of food security either directly or indirectly had been embarked upon (Ekpu, 2009; Oriola, 2009; Idachaba, 2009, Adebayo & Ojo, 2012; Iwuchukwu, 2012). Some of these programs included National Food Security Programme (NFSP), Structural Adjustment Programme, (SAP), National Economic Empowerment Development Strategy (NEED), Millennium Development Goals (MDG), Sustainable Development Goals (SDG) etc (Adebayo, & Ojo, 2012).

Literatures have attested to the failure of these programs and policies in combatting hunger, removing poverty, addressing undernourishment and achieving food security (Abu & Soom, 2016; Babatunde *et al.* 2010). Failure of these policies and programmes to addressing food security issues in Nigeria was what had always lived some household to resort to some fast adjustment behaviour in an effort to ease their situation. In many low-income countries, poor families have coped by consuming cheaper food (with poorer nutritional value), eating less, and restricting food intake for adults so children can eat more (Brinkman *et al.*, 2010). Such household adaption strategies had also been observed in richer countries undergoing public spending cuts

and austerity measures, as shown by the increased use of food banks (Selke, 2009; Butler, 2012), and parents skipping on meals (PSE-UK, 2014). Such strategies can result in micronutrient and calorific deficiencies which increased undernutrition particularly in children (Ortiz *et al.*, 2011). Adding to this was the inadequacy in the establishment of long-term coping strategies that most household can turn to than resorting to informal ones. The series of discussions above and different issues raised were militating against the attainment of achieving household food security in Nigeria. It is against this background that the following questions were raised:

- i. what are the changes in household's food security status overtime in Nigeria?
- ii. what are the factors that influence food security amongst households in Nigeria?
- iii. what are the coping strategies options used by insecure households at times of food inadequacy in Nigeria?

It is against this background that the study examined the state of household food security status, its determinants and coping strategies with a view to suggesting policies that would reduce food security problems, poverty and ensure stable economic growth in the Nigerian economy. The study used food consumption score developed by WFP/VAM (2008), to develop food security index for households which were used to assess the changes in households' food security status amongst panel households. Arc GIS maps was also be used to demonstrate the spatial distribution of food security across all the zones in the country for easy comprehension. Arc GIS is a geographical information software used for mapped and analysed spatial data.

#### **1.4 Problem Statement**

Issue of households' food security in Nigeria was a crucial one and it has received tremendous attention from different authorities and organisations. These ranges from efforts of reducing hunger, control of malnutrition, addressing emergency needs upon menace and disaster occurrences, tactical approach to climate change adaptation strategy, addressing income inequalities, subsidising fertilizer, etc (Abu, 2012; Adebayo, 2012; FMAWR 2008; Owolabi 2016). Literature and evidences (as highlighted in Figures 1.3, and 1.4, (DuPont 2017) revealed that household food security problem in Nigeria stemmed from failures in certain structural developmental, regulatory and stabilisation policies that resulted in food shortage (Abalu, 1999; Babatunde *et al.* 2010; Adebayo & Ojo, 2012; Abu & Soom, 2016). The shortages in food provision creates a wide food deficit in household food supply.

Available records indicated that poverty level was very high nearly 50%, half of the population, the hunger level was 27.9 signalling the seriousness of the situation requiring attention. The level of undernutrition which constituted (children under the age of 5 dying, wasting stunting and maternal death while in labour) had also been on the rise (Figures 1.3, 1.4 & 1.5,). Similarly, the pressure of food demand on its supply, stagnating local production, heavy dependence on import causing wide deficit on

foreign reserve because of our unfavourable domestic currency exchange value and imported inflation (Figures 1.11 & 1.12 and Table 1.2).

The Government, alongside with donor agencies, had engaged huge sum of money to convert this problem, but records from available reports, policy outcomes spoke the needs for a lot of action to be done (Babatunde 2007, 2010; Ibok *et al.* 2014; Abu and Soom 2016; CBN 2018; NBS, 2018). Millions still lives in extreme provocation of poverty and remained vulnerable to food insecurity. As the case may be, any attempt to resolve the issue of food security in an area required the need for understating the current trend of food security in that area. In Nigeria, what was available was the trend of food security at national level, but the trend of food security at household and individual level were rarely found. These reasons inspired the need for an empirical study on household food security in Nigeria with the view to understanding the changes that happened over time, also tracing the areas with severe issues that may require urgent needs.

Counting from the series of projects and programmes so far executed or still in process, by the Government, food security by now was supposed to have improved. But empirical records have revealed the general outcomes of these programs was far below the expected results (Babatunde *et al.* 2010; Okoye, 2004; Abu & Soom, 2016). Nearly 50% of population were poor living below poverty line and were vulnerable to food insecurity, largely found in rural poor areas, those that could not afford access to food they need for healthy and productive living; given rise to the high level of undernourishment and hunger (Abu & Soom, 2016; IFPRI 2019, FAO, WFP & UNISEF 2019). Figures 1.4, 1.5 and 1.6, revealed more on impending poverty and malnutrition in the country.

Nigeria, being the most populous country in Sub-Saharan Africa, was estimated to be about one-fifth of the total population in the region and 47 percent of West the Africa's population (World Bank, 2012). The country blessed with both human and natural endowment, if not for other reasons, had the capacity to build a prosperous economy and provide for the basic needs for all its citizens. But still Nigeria was ranked among the poor and undernourished nation in the world (Ukehe, 2004; Ibok *et al.*, 2014; DuPont, 2016).

These problems motivated the need for empirical research on identification of factors affecting household food security, as they play significant roles in addressing the issues of household food security, (Arene & Anyaeji, 2010) to establish better understanding of the key factors that influenced food security of a given area of study. Factors determining food security of an area differed at different levels, ranging from global, regional, national, household and individual levels. This was because, the concept of food security was complex and multi-dimensional phenomenon such that, each area had its own peculiarities that needed to be established before any policy could be viable in solving the problem at hand (Wasiu *et al.*, 2015; Zhou *et al.*, 2017). Thus, these disparity in their outcomes will greatly influences the recommendation for policy formulation.

Despite the need for these studies in Nigeria, there were fewer studies mostly covering small sample sizes of a state or local area, faced with different challenges and influenced more by different factor; as such drawing a general conclusion for the country is largely impossible. It is against this background that the present study tended to figure out the key factors that could affect household food security, which was expected to proffer solution to the problem of policy summersault and create a lasting solution in the area of addressing food security issues among households in Nigeria. The study used three waves of general household survey data for 2010-11, 2012-13 and 2015-16 in Nigeria to examine the determinants of household food security in the country.

Lastly, the magnitude and severity of food security problem in Nigeria had been an issue that called for serious concern as 94 million people among the households in the country were vulnerable to attack by hunger and food insecurity; the consistent increase in price of food items eating away consumers' income there by reducing access to variety of foods putting his food security at risk (Figure 1. 13) coupled with absence of an organised formal setting designed to reduce households' burden in times of food inadequacy (Alayende & Alayende, 2004), and large income distribution inequality with more than lowest 30% of the population sharing barely less than 7% of the national income (Figure 1.15). This, and other reasons, offered a solid base for a research on coping strategies adopted by insecure household either to maintain survival or resist the pressure embedded in food shortage and motivation of resorting to illegal options to acquire the means. However, these impending issues compelled the need for an empirical study to establish how this segment of the society cope-up with the challenges of failing food supply.

## **1.5 Objective of the Study**

### **General Objective**

The general objective of this study is to examine food security status and its determinants among households in Nigeria, as well as its coping strategies among insecure household in times of food insufficiency.

### **Specific Objectives**

- i. to assess the changes in food security status in Nigeria;
- ii. to identify the determinants of food security amongst households;
- iii. to examine the factors of food insecurity on coping strategy amongst food insecure households.

## **1.6 Significance of the Study**

The study was intended to contribute significantly to the existing empirical literature and offer practical solutions in the area of household food security and to some extent the overall national food security issues in Nigeria.

Developing food security index at household level by highlighting some issues that could lead to the existing pattern of distribution in food security status and highlighting how they could influence the attainment of food secured status in the country. This could serve as an important policy instrument of welfare development. Considering the importance of understanding the factors that influence household food security in a country, the current study attempts to add to the existing literature, an examination of factors that could influence household food security and their effect on both northern and southern households in Nigeria. Thus, this will also provide insight into effective policy formulation in that regard.

The literature on households' coping strategy and its impact on sustaining household's at times when food availability was inadequate. Series of contributions have been made by several studies in this area, however, the contribution of the current study through the development of coping strategy index for the households in Nigeria and examining the effects of coping strategy among insecure households would help to proper solutions for maintaining food security issues in Nigeria.

On practical implications, the aspect of the current study that captures the development of food security index for households in Nigeria can contribute in providing information for developing alternative measures to the governments in policy formulation in the area of households and national food security. Moreover, understanding the real problem on ground will reduce policy summersault and mismanagement of resources.

The third objective may also assist the household with information on most convenient measure that handles food security issues and the need to stand against the striking effects while the government will be equipped with knowledge of vulnerable group among households and most suitable coping strategies that could be effective; more precisely in areas that may require urgent and befitting solution to insecure households.

## **1.7 Scope of the Study**

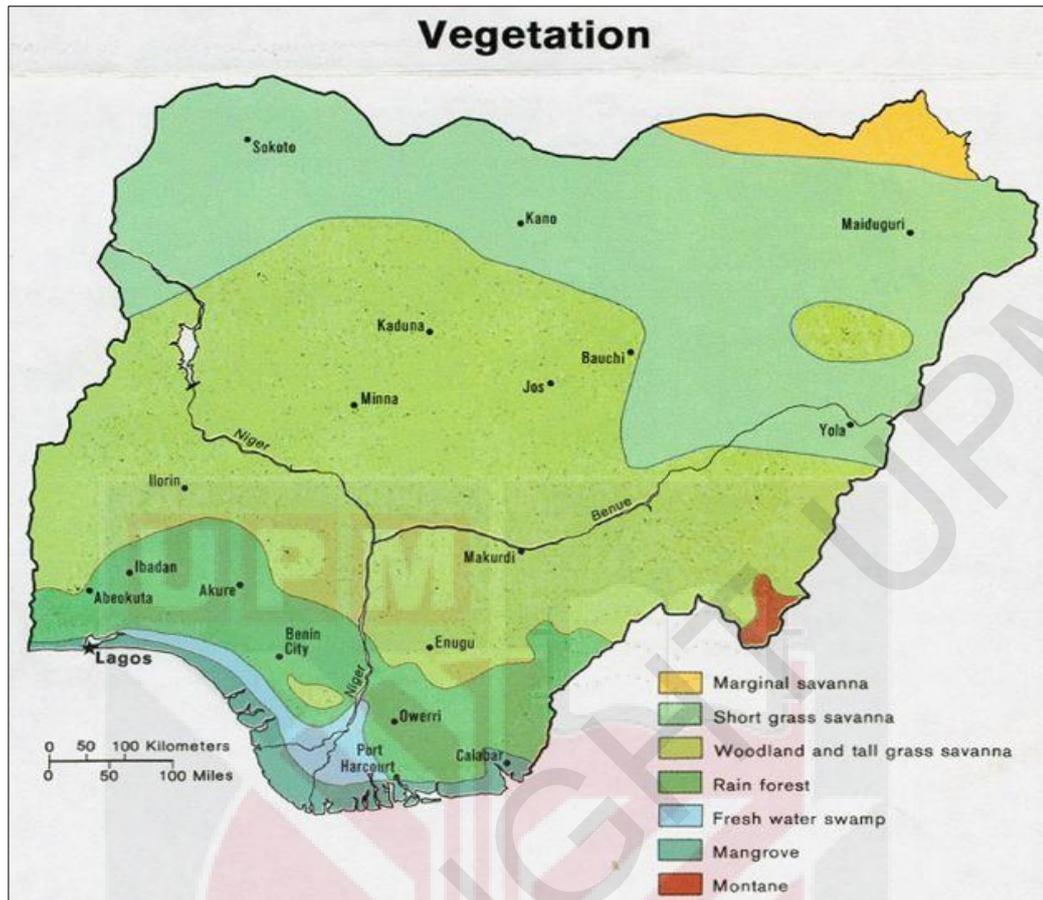
The study tends to explore the state of food security, its determinant and coping strategy among households in Nigeria. The study is limited to household food security in Nigeria and therefore may not be enough for those writing on wider aspect of food security like national or global. The limitation of the work on food consumption score as a proxy to food security might reduce the quality of the work as it remains a fact

that until now there is no one unanimously agreed measure as the most must convenient for measuring food security, also, no single measure can conveniently capture all the indices of measuring food security. Nevertheless, food consumption score being peculiar to African countries, greatly influenced the decision for the choice. Similarly looking at factors that could influence the decision of the household on selecting the coping strategy to maintained food shortage, here the study focuses on the effects of coping strategies at times of food insecurity.

### **1.7.1 Study Area**

Figure 1.9 shows where the present study was undertaken. Naturally, location is a factor that favours Nigeria being located within the tropical zone at latitude  $4^{\circ}$  and  $14^{\circ}$ N and longitude  $3^{\circ}$  and  $15^{\circ}$ E. The country has two major rivers namely Niger and Benue that divide the country into regions of southern and the northern region. To the north shares its border with the Niger Republic, and with the Cameroun Republic to the east. The Benin Republic, is by the west, whereas towards the down south, is a coastline of the Atlantic Ocean. The country has a total land size of 923,768 km<sup>2</sup> with 1450km from north to south and 800km west to east World Fact Book, (CIA, 2011). The climatic condition in the country differs with savannah grassland in the north, while in the east, it has tropical rain forest and mangrove swamps in the south, with rainfall throughout the year ranging between 60-80inches (1500mm to 2000mm) NBS, (2010).

The average annual temperature in the country is between  $35^{\circ}$  C maximum in the north and  $18^{\circ}$ C minimum in the south, with as low as  $14^{\circ}$ C in the highland areas of Jos plateau. The agricultural sector in Nigeria contributes about 20% of the GDP and plays a key role in the employment of a large majority of the labour force (NBS, 2010). Presently, Nigeria is the most populous black nation in the world and Africa, where the last national census of 2006 placed the Nigerian population at 150 million people. Currently, the population is projected to have hit 192 million (Worldometers, 2017).



**Map 1.1 : Map of Nigeria Showing Some Major Cities**

(Source : [www.worldatlas.com/webimage/countrys/africa/nigeria/ngland.htm](http://www.worldatlas.com/webimage/countrys/africa/nigeria/ngland.htm))

## 1.8 Organisation of Chapters

The study was designed to cover six chapters as follows. Chapter 1: Introduction, comprising of background of study, trends of food security, research problems, objectives, significance and scope of the study area, and the organisation of the chapters. Chapter 2 covers literature review on the concept of food security, households' food security, factors affecting households' food security, and households' coping strategies. Also, empirical literature related to the objectives of the study was also examined.

The objectives of the study were structured into three essays, each presented as a chapter on specific objective of the study. Chapter three covers objective one, the development of household's food security index, and the dynamics of household food security status among panel households. Chapter four dwelt on objective two that is, examining determinants of food security amongst households in Nigeria. Chapter five covers objective three on effects of coping strategy options adopted by food insecure households at times of food insufficiency. Lastly, chapter six, covers the summary, conclusion, policy implications and recommendation for future studies.

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## PUBLICATION

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