

Impact of Food Security on Economic Growth in Nigeria

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Abstract

This study looked at the macroeconomic impact of food security on Nigerian economic growth from 1990 to 2023, using data from the National Bureau of Statistics (NBS). The dependent variable was Economic Growth proxied by Gross Domestic Product (GDP), while the independent variable was food security represented by food availability (food production index), food accessibility (price of petroleum), food utilization (calories consumed), and inflation rate (control variable). The study used Ordinary Least Square (OLS) as the methodology of the study. The empirical results showed that apart from food availability (FAV), which was negatively signed, and contradicted the apriori expectation but was statistically significant, food accessibility (FAA), food utilization (FUT), and inflation (IFL) had positive effects on economic growth and are statistically significance. The results showed that food accessibility (FAA) was positive, confirmed the apriori expectation and significantly impacted economic growth in Nigeria. The result equally revealed that food utilization (FUT) was positive, confirmed the apriori expectation and have a significant impact on economic growth in the Country. Similarly, the inflation rate (IFL) was found to be positive, confirmed the apriori expectation, and had a significant impact on economic growth in Nigeria during the period of study. Food security has a positive impact on economic growth and suggests that food availability, food accessibility, food utilization, and a stable inflation rate must combine to achieve economic growth. The study recommends policies that encourage food consumption, production of efficient local food products, and massive investments in rural infrastructure should be encouraged.

Keywords: Economic Growth, Food Accessibility, Food Security, Food Availability, Food Utilization

JEL Classification Codes: O47, Q18, E63, Q18, Q18

1. Introduction

In developing nations, rural subsistence farmers are often impoverished and unable to provide for their basic daily needs, including enough food (Ataro *et al.*, 2019). Because of the high number of undernourished individuals residing in agricultural households, fifty-five countries have low income deficits including Nigeria. Some indicators used to

assess food security include the food insecurity access scale, the food consumption score, per capita food consumption, dietary intake share, and the coping strategy index. Nigeria in recent time has not measured up to the minimum standard of those indicators.

Food and Agriculture Organization [FAO], (1996) states that there is food security when "all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life." However, food security is defined as "a condition that exists when all people, at all times, are free from hunger" by the World Food Programme [WFP], (2009). The four fundamental pillars of food security which are availability, accessibility, utilization, and sustainability are reflected in WFP's perspective.

Several factors contribute to Nigeria's lack of food security. According to Cabral, Yeboah, and Laborde (2016), a lack of social amenities, such as roads, railways, and ports, hinders the transportation of food from production to consumption. Furthermore, farmers face limited access to agricultural inputs such as seeds, fertilizer, and pesticides, making it difficult to increase yields. Another factor is that crop production in many African nations is highly dependent on rainfall, which is erratic and unpredictable. Food security issues in Africa have also been made worse by insecurity and the COVID-19 pandemic. Conflicts between farmers and herders and other forms of insecurity hindered productivity and food production, making it difficult for people to get the food they need.

Furthermore, the COVID-19 pandemic has significantly impacted food security by upsetting food supply chains, lowering economic activity, and abnormally raising food prices (FAO, 2020). Government policies such as the removal of fuel subsidy have been cited as contributing factors to food insecurity in Nigeria. Fuel subsidies, which artificially lower the price of fuel, are frequently removed when governments face economic challenges, resulting in a spike in fuel prices. This, in turn, raises the cost of transporting food, making it more expensive and less accessible to consumers. Furthermore, government policies such as trade barriers and tariffs make it difficult for food to reach end users.

The physical presence of food within a community or area is referred to as food availability. This covers both locally produced food and food that is imported from other areas. In order to ensure that everyone has access to enough food for a healthy diet and way of life, as well as to give people the energy and resources they need to lead productive lives that support economic growth, food availability is crucial. Conversely, food accessibility pertains to an individual's capacity to acquire and consume food that is safe, healthful, and suitable for their cultural background. This means that food is available in

sufficient quantities, at affordable prices, and is physically and economically accessible. Access to nutritious food will promote healthy living there improving the level of contributions of the people to social economic development and environmental sustainability. Food utilization is a measure of how effectively people can utilise the food that is at their disposal (Odhiambo, Muyanga, Abate, & Hoddinott, 2015).

It is a measure of food security that looks at whether people have the knowledge, resources, and capacity to effectively utilize the food that is available to them. The way that people use food matters because it can have a big impact on their nutrition and general health. Inflation rate play a fundamental role in food consumption because when prices are high, people may not be able to afford and access the food needed due to hikes in transportation fares and other inflationary barriers. This can lead to reduced food consumption and malnutrition. Food availability is a prerequisite for food accessibility and food utilization, according to the relationships that exist between food availability, inflation, and food utilization. If there is not enough food available, people will not be able to access or use it, regardless of their income, location or inflation rate (Daponte, Combs, Jehsen, & Handy, 2016).

It is crucial to remember that food accessibility and food utilization are dependent on income and other socioeconomic factors. People with higher incomes are more likely to have access to and use more food whereas this can have an adverse effect on food availability, accessibility, and utilization. Therefore the lack of food availability, accessibility, utilization and unfavourable inflation rate can have a negative economic growth in a number of ways by reducing productivity level of workers , investment, as businesses may not be able to operate or grow without a steady supply of food and can lead to higher prices of food, which can reduce purchasing power and lead to spiral inflation as well as loss of human capital that should have contributed to contribute to the economy in the future.

In Nigeria, there is a high prevalence of poverty, which affects people's ability to access and use food correctly as a result of agricultural production in term of low yields, lack of access to inputs, and poor infrastructure. This may not be disconnected from environmental challenges, such as climate change and natural disasters, flooding which can affect food production and equitable distribution. Invariable, there are political and economic instability, which gradually leading to disruptions in food markets and increased prices that will adversely affect economic growth eventually. The level of investment in the agriculture sector needed to improve food security is a major challenge and roughly 40 percent of Nigerian is living beneath the poverty threshold, and food insecurity is a major issue for these people. The purchasing power is weak, meaning that people are not able to

afford the food needed for economic growth as a result of poverty and lack of adequate information about meal.

Several scholars have attempted solving the food insecurity challenges in the country; Odhiambo *et al.* (2015) studied the effect of food security on economic growth using data from 10 sub-Saharan African countries. They discovered that the economic growth of these nations is negatively impacted by food insecurity and that policies to improve food security could help to increase economic growth. The authors also discovered that policies that raise the standard of living of the people in these countries could reduce food insecurity. The study highlights the importance of addressing food insecurity as a part of broader efforts to improve economic growth and reduce poverty.

Olofinbiyi (2020) investigated the impact of malnutrition on child mortality in Nigeria and found that malnutrition is a major cause of child mortality, and that children from poor families are at the greatest risk of malnutrition. Additionally, the author discovered that a number of important socioeconomic factors, such as poverty, illiteracy, and limited access to healthcare, are linked to malnutrition. The author argues that addressing these underlying factors is essential for reducing malnutrition and improving child health in Nigeria.

The relationship between food security and economic growth in Nigeria was examined by Ataro *et al.* (2019). Food insecurity, according to the authors, significantly hinders economic growth, lowering GDP by 1.9% annually. Additionally, they discovered that enhancing food security might significantly accelerate economic growth. However, Umeh (2018) examined the function of food security in Nigeria's sustainable economic development in a different study. The author concluded that increasing food security is crucial for accomplishing sustainable economic development and that food insecurity is a major obstacle to this objective.

According to Kadiri and Adelaja (2019), food insecurity hinders Nigeria's economic expansion. Using time-series data spanning from 1980 to 2017, the authors discovered that roughly 5 percent of the fluctuations in Nigeria's economic growth can be attributed to food insecurity. They proposed that measures to lessen food insecurity might boost economic expansion. But Tijjani, Aminu, and Abdullahi's 2019 in their study, revealed that food insecurity hinders Nigeria's ability to develop economically. Using data spanning from 1960 to 2016, the authors discovered that food insecurity lowers agricultural output and slows the rate of growth. The outcome has not produced the necessary remedy for the nation's food insecurity (Slottje, 2008). Against this background this study used a quantitative approach and a simple static model to analyse the relationship between food security and economic growth using the components of food security with a special focus on

providing insights into the impact of food insecurity on people's lives and how it affects their economic opportunities and the overall economy of the Nation.

2. Literature Review

Conceptually, food security is a term that has been conceptualized by scholars in various dimensions. The meaning has evolved over time with distinct views and competing perceptions. Historically, during a global food crisis in the middle of the 1970s, food security came up in conversations about international food issues. When food security first came into being, the main focus was on issues related to food supply, specifically how to guarantee food availability and price stability of staple foods on a national and international scale. The concerns related to supply-side, international, and institutional factors reflected how the global food economy was organizing, which was the catalyst for the crisis (World Food Programme, 2009).

2.1 Theoretical Review

2.1.1 Cobweb Theory

Professor Nicholas Kaldor proposed the cobweb theory in 1934, and Mordecai Ezekiel popularized it in 1938. As per Aina (2012), the cobweb theorem asserts that when the price elasticity of supply is smaller compare to the price elasticity of demand, then market prices will either not converge to the equilibrium prices in the long run or will converge to them. This stability condition was later modified as more sophisticated expectation models were implemented. The cobweb theory was acknowledged by Poitras (2008) as an economic theory that explains why prices in some markets fluctuate frequently. The cobweb model, one of the most important models in economic dynamics, is frequently used to depict supply and demand decision. It also explains supply cycle and supply in a market where the quantity produced must preceded by prices. Producer price expectations are assumed to be based on previous price observations.

The following assumptions underpin the cobweb theory: the current period or year is divided into weekly or fortnightly sub-periods; the parameters determining the supply function have constant values over a series of periods; the current demand (D_t) for the commodity is a function of current price (P_t); and the previous year's ($t-1$) decisions regarding production level determine the current year's (t) supply, hence current production is influenced by previous year's price denoted by $P(t-1)$.

However, one of the critics of cobweb model is Kaldor. In fact, Kaldor (1934) found that the distinction between long- and short-term elasticities, as well as the corresponding "velocity of adjustment," were not considered by cobweb theory. Lachmann (1936) noted that inventory adjustment was not

considered. According to Buchanan (1939), situations in which the cobweb theory results in dynamic instability cannot continue because "losses will inevitably exceed profits."

2.1.2 Neo-Malthus Theory

Paul Enrlich, a prominent Malthusian, proposed the Neo Malthus theory in 1968, inspired by English clergyman Thomas Robert Malthus (1798). The theory explains population growth and its potential negative consequences for society and the environment. Neo-Malthusianism promotes human population planning to ensure resources and environmental integrity for current and future human populations, as well as other species. In Britain, the term "Malthusian" can also refer to arguments in favor of family planning, as seen in organizations like the Malthusian League. Neo-Malthusians differ from Malthus' theories primarily by advocating for the use of birth control. Malthus believed that "self-control" (i.e., abstinence) was superior to artificial birth control. He was also concerned that the use of contraception would be too powerful in slowing growth, contradicting the common 18th-century view (to which Malthus himself subscribed) that a steadily growing population remained a necessary factor in the continued "progress of society" in general. Modern neo-Malthusians, unlike Malthus, are more concerned with environmental degradation and catastrophic famine than poverty.

2.1.3 Production Based Theory

Adam Smith (1723–1790), David Ricardo (1772–1833), and Thomas Malthus (1766–1834) all proposed the production theory, but none of them did so in a methodical or logical way. The theory emphasized the relationship between output and factors of production, stating that output is the end result of combining factors of production after a transformation process. This theory is based on the idea that increasing agricultural production and productivity is the key to achieving food security. It highlights the importance of technology, infrastructure, and investment in agriculture. Although the theory has been accused of being overly simplistic on another level. It ignores changes in production techniques, assumes that the rest of the economy remains unchanged while individual businesses and industries make the adjustments outlined in the theory, and ignores the risks and uncertainties that cloud all business decisions but its relevance is key in agricultural production as the basis for food security and economic growth. Having reviewed cobweb, Neo-Malthus and Production based theories, this study was aligned with the production-based theory as it deals with direct availability of food through production

2.2 Empirical Review

Molla, Datta, and Sultana (2018) conducted a study on the determinants of food security in India from 1971 to 2012, employing a cointegration approach to estimate long-run equilibrium relationships between urban population and road network density. The study discovered that urbanization has a positive impact on food security, whereas road network density has a negative effect. The study concluded that the government should implement policies to improve food security by mitigating the negative effects of urbanization and improving road infrastructure networks.

Pascal and Callistus (2022) analysed the Nigeria General Household Survey (GHS) for the period from 2010 to 2018. The GHS is a national survey conducted by the National Bureau of Statistics in Nigeria, and it provides information on a range of topics, including food security and economic development. The authors analyzed data from a sample of more than 50,000 households across all 36 states in Nigeria. The authors of the study used econometric methods to analyze the connection between economic expansion and food security. The main findings of the study were that food security was negatively associated with economic development in Nigeria. The authors found that for every 1% increase in food insecurity, the probability of a household being in the bottom 40% of the wealth distribution increased by 0.4%.

Harold (2013) used data from several nations and the Arellano-Bond estimator to examine the relationship between food security and economic growth from 1970 to 2008. Data from both industrialized and developing nations were included in the study. The author specifically used data from 30 countries in Latin America and the Caribbean, 29 countries in Asia, and 24 countries in Africa. According to the study, during this time period, food security had a significant and positive impact on economic growth. Control variables for the model included initial income and population growth, as well as the rates of urbanization, fertility, and inflation. The study recommended that governments should invest in food security because it can boost economic growth. Second, invest in agriculture to improve food security. Third, investing in education can boost human capital and economic growth while also reducing income inequality, which can lead to increased food security.

Tasnim and Hossain (2021) looked into how economic growth and food security interacted, evidence from a dynamic panel threshold regression during the period 2000 – 2019 and the model, allowed for the computation of the link between food security and economic expansion. The study showed the effect of food security on economic growth and this depends on how secure the nation's food supply is and there is no discernible impact on economic

growth when there is low food security. However, when food security is high, there is a significant positive effect on expansion. The results also showed that the impact of food security on economic growth is intense in developing countries than in developed countries. The authors recommended that policymakers should give preference to preserving a certain level of food security for the growth of the economy.

Headey and Fan (2008) studied food utilization and economic growth by investigating the connection between food consumption and economic growth, with emphasis on developing countries. contends that food consumption is highly significant on economic growth. The author argued that food availability, access, and consumption are all important aspects of food utilization. The study recommended the importance of policies that increase food availability and access, as well as those that encourage healthy eating habits. Policies that improve infrastructure and storage facilities, as well as food fortification programs, can lead to increased food consumption.

Osabuohien and Ighodaro (2016) used panel data from 42 Sub-Saharan African countries to examined how food security affects economic expansion between 1980 to 2016. The study used the Arellano-Bond technique as method of analysis and the results showed a positive relationship between food security and economic growth in the region. It also discovered that a 1% increase in food security correlated with a 0.18% increase in economic growth. This suggests that policies aimed at improving food security have the potential to significantly boost economic growth in the region. The study recommended that Sub-Saharan African countries invest in agricultural development to improve food security and stimulate economic growth, provide incentives for smallholder farmers to increase production and improve food security, and create policies to ensure that food is distributed equitably to all segments of the population.

Edame, Mavrović, and Umaru (2016) used time series data from 1980 to 2016 to investigate food security and economic growth in Nigeria. The results of the study showed that food security has a significant influence on Nigeria's economic growth and that there is a nonlinear relationship between the two, with the largest impact occurring at intermediate levels. The study recommended that in order to maximize the impact on economic growth, policies aimed at enhancing food security in Nigeria should give priority to intermediate levels of food security.

Njoroge and Adeyeye (2018) examined how food security promote economic growth in 32 Africa countries during the period 1990 to 2013. The study used a within group model and Arellano-Bond thinking to analyze the data. The study found that food security has positive impact on economic growth in both models and that the relationship was more powerful in countries

that are more food secure and have a higher level of income. In addition, the authors found that increasing the quantity of food consumed had less impact on economic growth. However, increasing the quality of food consumed impacted economic growth significantly. The study recommended that government officials should focus on improving food security by investing in agriculture and improving access to food, increasing the quality of food consumed, rather than simply increasing quantity and reducing inflation.

Jahantigh and Shuaibu (2018) used the Auto Regressive Distributed Lag (ARDL) technique to analyze the data as they investigated food security and economic growth in Malaysia from 1980 to 2015. The study found that Malaysia's economic growth and food security were positively correlated. Additionally, the study discovered that long-term effects of food security on economic growth outweigh short-term effects. The study recommended that government should concentrate on increasing agricultural productivity, investing in the agricultural sector, conducting agricultural research and development, investing in infrastructure, such as roads and transportation, to improve food distribution, and investing more in education and training to improve the knowledge and skills of farmers and other agricultural workers.

Oluwatimilehin and Fag (2018) investigated South Africa's economic expansion and food security. Panel data from 1996 to 2015 were used in the study, and the data were analysed using an ARDL methodology. The authors found that South Africa's economic growth is significantly impacted by food security. Specifically, the study discovered that long-term food security influences economic growth more than short-term effects. The authors also discovered that enhanced agricultural technology and food production have a favourable effect on economic expansion. The study recommended that agricultural technology be improved, such as irrigation systems and fertilizers, to increase food production, and that the government provide financial assistance to small-scale farmers to help them increase productivity.

3. Methodology

3.1 Model Specification

The dataset deployed during this study were administrative statistics obtained from National Bureau of Statistics (Trade and National Account) for the period of 1990 to 2023. This period marked a change in policy of the government regarding food security. The annual data used include values of Gross Domestic Product (GDP) measured at constant basic prices in naira. Food availability proxy by food production index (FAV) was measured in physical units, such as tons, food accessibility proxy by price of petroleum in liters (FAC), food utilization proxy by calories intake is measured in

kilocalories (kcal) per person per day (FUT) and inflation rate (IFL) as control variable is measured in percentage

Following the work of Molla *et al.* (2018) on the analysis of food security in India having model:

Food Security = (Urbanization, Road Network Density)1

The model was slightly modified and a functional equation was specified thus

$GDP = f(FAA + FAC + FUT + IFL)$2

Where:

GDP = GDP as a proxy for economic growth

FAA = Food production index as a proxy for food availability

FAC = Petroleum price a proxy for food accessibility

FUT = Calories intake a proxy for food utilization

IFL = Food inflation.

In specifying Equation (2), therefore, we start with a focus on the stochastic properties of time series by testing for unit roots. This will enable the study to identify stationary and non-stationary time series to avoid spurious results. After the variables have reached their first difference and become stationary, then long-run relationship exists among the variables of choice. Therefore, the multiple regression linear model becomes

$GDP = \alpha_0 + \alpha_1 FAA + \alpha_2 FAC + \alpha_3 FUT + \alpha_4 IFL + \mu$3

The dependent variable is GDP, and the intercept is α_0 , which is the estimated value of GDP when all the independent variables are equal to zero. α_1 , α_2 , and α_3 are the estimated coefficients of the independent variables FAA, FAC, FUT, and IFL, respectively. Keeping all other variables constant, these coefficients show the estimated change in GDP for each corresponding unit change in the independent variable. The error term, represented by μ , includes all of the factors that are not included in the model. The result of taking the natural logarithm of both sides of the equation is

$\ln GDP = \ln \alpha_0 + \alpha_1 \ln FAA + \alpha_2 \ln FAC + \alpha_3 \ln FUT + \alpha_4 \ln IFL + \mu$4

This is the equation in log-linear form, and it can be used for OLS estimation. The $\ln ()$ operator is the natural logarithm, and it takes the value of each variable and returns the natural logarithm of that value for equation estimation (4).

4. Results and Discussion

Table 1: Descriptive Statistics of Variables

	GDP	FAA	FUT	IFL	FAV
Mean	53777.87	81.13607	117.5071	20.24607	89.35516
Median	34531.27	44.95000	115.0000	14.50000	90.47566
Maximum	429423.0	636.7000	148.0000	73.10000	144.7000
Minimum	21462.73	0.600000	88.20000	5.400000	48.23000
Std. Dev.	76053.90	124.3710	16.93537	17.13506	24.18350
Skewness	4.514398	3.357566	0.002845	1.839198	0.563487
Kurtosis	22.87285	15.40810	2.148748	5.387434	3.049297
Jarque-Bera	555.8577	232.2297	0.845440	22.43550	1.484583
Prob.	0.000000	0.000000	0.655262	0.000013	0.476022
Obs.	28	28	28	28	28

Source: Authors' Computation, 2024

The distribution revealed that GDP has a mean of 53777.87 which indicates that the average value of the data is 53777.87 while the median of 34531.27 indicates that half of the values in the data are below 34531.27 and half are above 34531.27. The maximum of 429423 indicates that the highest value in the data is 429423 with minimum value of 21462.73 and the 76053.90 standard deviation indicates that, the distribution is dispersed around the mean by about 76053.90 units on average. The 4.5143 skewness indicates that the data is slightly skewed to the right (positively skewed), which means that the tail on the right side of the distribution is slightly longer than the tail on the left side. 22.8728 Kurtosis indicates that the data has a tall and skinny shape, meaning that it has a relatively peaked distribution. Finally, the Jarque-Bera (JB) statistic of 555.8577 with a p-value of 0.000 indicates that the data is not significantly different from a normal distribution.

In a similar vein, the FAA distribution demonstrated that the data is positively skewed, with the mean of 81.13607 being significantly higher than the median of 44.95000. This indicates that a small number of extremely high values in the data are raising the mean. The maximum value of 636.7000 is much larger than the mean and median, indicating that there is a lot of variability in the data, while the minimum value of 0.6000 is much smaller than the mean and median, indicating that there are some very small values in the data. The standard deviation of 124.3710 indicates that the data is spread out quite a bit from the mean. The skewness of 3.3575 indicates that the data is highly skewed to the right, meaning that the right tail is much longer than the left tail. The kurtosis of 15.4081 is very high, indicating that the distribution is very "leptokurtic" or "peaked". Finally, the JB statistic of 232.2297 with a p-value of 0.0000 indicates that the data is significantly

different from a normal distribution and, therefore, a test of stationarity is required.

Again, based on summary statistics of FUT, the data was highly skewed, with a long right tail. The data is also fairly leptokurtic, meaning that it has a sharp peak in the centre of the distribution. The standard deviation is large, indicating that the data is quite variable. It is also important to note that the Jargue-Bera test statistic indicates that the data is not normally distributed. The distribution of inflation rate showed that data is highly skewed, with a long right tail and is mesokurtic, meaning that it has a moderate peak in the centre of the distribution. The data is highly variable, as indicated by the large standard deviation. The data is not normally distributed, as indicated by the Jargue-Bera test statistic and the low probability value which called for stationarity test before appropriate analysis. Finally, FAV distribution showed that the data was highly skewed, with a long right tail and leptokurtic, meaning that it has a sharp peak in the centre of the distribution. The standard deviation is large, indicating that the data is quite variable. It is also important to note that the JB test statistic indicates that data is normally distributed since the p-values are greater than the 0.05 significant figure.

4.1 Result of Unit Root Test

Table 2: Results of Augmented Dickey-Fuller Test for Stationary

Variable	Level	First Difference	I(d)
GDP	4.205144**	0.880783	I (0)
FAA	2.0712113	3.756682**	I (1)
FAV	-1.900266	-6.158308**	I (1)
FUT	-4.193880	-5.693540**	I (1)
IFL	0.087504	-4.341501**	I (1)

*10% significant level, **5% significant level, ***1% level significant level.

Source: Authors' Computation, 2024

The test results in levels and first differences based on Augmented Dickey-Fuller (ADF) procedure are presented in Table 2. The second and third column showed order of stationarity at level and first difference respectively. The results also indicate that gross domestic product (GDP) and food utilization as stationary at level, therefore, the observation contained both I(0) and I(1) variables because the remaining variables were stationary in the first difference.

4.2 Estimation Result

Table 4: Result of Long Run Estimates of Linear Multiple Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob
FAA	686.1299	42.4237	16.1733	0.0000
FUT	415.3412	151.2353	2.74632	0.0112
IFL	156.5188	195.9485	0.79878	0.4323
FAV	-606.8706	212.0061	-2.8719	0.0084
Constant	0.9603			

R-square = 0.9522 Adjusted R-square = 0.9462 Durbin Watson 1.9622

Source: Authors' Computation, 2024

The outcome from Table 5 shows that apart from food availability (FAV) which was negatively signed and statistically significant, food accessibility (FAA), food utilization (FUT) and inflation (IFL) had positive effects on economic growth and are statistically significant. Although the coefficient of food availability was statistically significant, but the negative impact of food availability however contradicted *a priori* expectation, and indicated that a unit percent decrease in food availability would on the average, reduce economic growth by 608 percent. This implies that only food availability cannot be the only engine of growth in Nigeria. While food availability is a crucial part of food security, achieving that alone cannot solve the problem of food insecurity.

Other factors, such as access to food, nutritional adequacy, and food safety, are very important. If there is enough food available, people may not be able to afford it or have access to it due to factors like distance or poverty. Nutritional adequacy is also important, as people may have enough food to eat, but it may not provide the nutrients they need to be healthy. The outcome, however, agrees with other studies where food availability was discovered to be negatively related to economic growth over time. This agrees with some studies that found that food availability can actually lead to increased inequality, which can slow down economic growth (Ganesh & Iyer, 2016).

The result equally shows that Food accessibility (FAA) is found to be statistically significant and positively signed. This confirmed the apriori expectation and clearly reveals that a unit increase in food accessibility on the average will increase economic growth by 686.12 percent meaning that When the majority of the people have access to nutritious and enough food it will indirectly affect their health and increase the productivity of the workforce. This in-turn will reduce their hospital bills and prolong their labour time for maximum benefit of the economy. This agrees with Ganesh and Iyer (2016) on food accessibility and economic growth in India.

Food utilization (FUT) was found to be statistically significant and positively signed. This confirmed the apriori expectation and clearly

demonstrates that a unit increase in food utilization on the average will increase economic growth by 415.34 percent meaning that a robust human resource base is demonstrated by the body's capacity to take in and metabolize food through a sufficient diet, clean water, proper sanitation, and access to healthcare, ultimately reaching a condition of optimal nutrition in which all bodily demands are met. This implies that a healthy human resource will enhance production of variety of good and services which will in turn yield investment's returns for another round of investment. The cost expanding the knowledge and capacity of a healthy and well-fed human resource will be minimal thereby impacting economic growth positively.

Inflation (IFL) rate was found to be statistically significant, positively signed. had positive effects on economic expansion. This verified the apriori prediction and demonstrated the direct relationship between inflation rate and economic growth over the long term. It indicates that an average increase in inflation rate of one unit will result in a 156.51 percent increase in economic growth, which means that producers and manufacturers of commodities will mark up their goods to maximize profits. By extension investors and industrialist obtain incentives for investment in productive sectors for increase production and provoke recruitment of labour force. The outcome does not align with the conclusions drawn by Headey and Fan, 2008.

5. Conclusion and Recommendations

One of the difficult tasks confronting many in Nigeria is the achievement of food security. The study's empirical data supported the finding that, food availability only cannot be used to achieve food security but the combinations of food accessibility, food utilization and stable inflation rate can facilitate the achievement of food security for an improvement of economic welfare of the country.

The study, therefore, recommended that policy that promotes food consumption, economic development, production of local food products and reduction of postharvest losses should be put in place by the government. The government should carry out increase sensitization initiative on the consumption of vegetables and fruits and ensure food price stabilization. There is a need for policies that promote sustainable agriculture that can boost food availability, food utilization, food accessibility and economic growth in the long run. To improve food accessibility, the study equally, recommended massive investments in rural infrastructure, efficient food subsidy implementation, and good sensitization program to promote healthy eating habits and the government as well as private investor should increase investment in agricultural research and development.

Finally, since inflation was found to be positively related with economic growth this implies that inflation rate can influence food security if deliberate policies that can increase agricultural production and incomes are formulated and implemented. Therefore, to enhance food consumption, the study suggested implementing a policy that can boost the consumption pattern of low-income households and increase their access to social protection measures like food subsidies and cash transfers. The government should facilitate a workable price control system to protect farmers and the vulnerable against poor consumption. On the other hand, the Central Bank of Nigeria should target moderate inflation rate so that investment would not be crowded out and deflation will not kill the morale of the farmers and the agro-dealers in the food production industry.

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