Journal of Economics, Finance and Management Studies

ISSN (print): 2644-0490, ISSN (online): 2644-0504

Volume 07 Issue 12 December 2024

Article DOI: 10.47191/jefms/v7-i12-56, Impact Factor: 8.044

Page No: 7475-7488

Exploring the Impact of Food Security Strategy and Policy Response on Food Crop Farmers Household Consumption Patterns in Kaduna State, Nigeria

Marcus, Nathan Ph.D.[1] , Adamu Friday Joseph[2], Donald David[3]

[1,2,3]Humanities and Social Science Education, General Studies Education (GSE)**,** Kaduna State College of Education Gidan-Waya, Kaduna State, Nigeria.

ABSTRACT: This study explores the impact of food Security strategies of National Programme for food security as an approach to ensuring adequate household consumption of beneficiaries' food crop farmers in Kaduna State. Review of secondary materials, in-depth quantitative data constituted data sources for the study. The multiple regression method was utilized in analyzing structured questionnaire. It was discovered from the findings that the programme has been beneficial to beneficiaries' in improving their productivity which in turn improve their household consumption patterns and as well their general well-being. Further result showed that there was delay in supply of farm inputs to the beneficiaries as well as poor repayment of loans awarded to the beneficiaries. The study recommended among others that; delay and untimely release of farm inputs to beneficiaries should be given appropriate consideration through suitable planning, costing and due organization among the various sponsors and supporters of the programmes; Frequent change in governmental policies that affects some viable governmental programmes should be looked into; new coming governments should ensure they sustain previous programmes with laudable result and their life span should be extended with wider coverage and increased number of beneficiaries.

KEYWORDS: Household Consumption, Beneficiary Food crop farmers, National Programme for Food Security, Kaduna State Nigeria.

1.1 INTRODUCTION

Food security remains a pressing issue in developing nations like Nigeria, where agriculture forms the backbone of many livelihoods. According to the World Food Programme (2020), food security entails ensuring all individuals consistently have physical, social, and economic access to adequate, safe, and nutritious food to meet their dietary requirements and preferences for an active, healthy life. In Nigeria, food security not only features prominently in national policy but also critically influences household welfare, particularly in farming communities (FAO, 2019).

Multiple factors, including inadequate infrastructure, variable agricultural productivity, climate change, and inconsistent policy measures, undermine food security in Nigeria (Babatunde et al., 2021). Kaduna State, situated in the North-Western part of the country, is a significant contributor to Nigeria's agricultural production, supplying substantial amounts of cereals, legumes, and tubers (Adebayo & Olagunju, 2019). However, despite its vast agricultural resources, the state grapples with food insecurity, impacting both farmers' livelihoods and household consumption patterns. Challenges such as unpredictable weather, declining productivity, and insufficient policy backing have led to inconsistent food access and availability (Usman & Salisu, 2020).

This research examines the influence of food security strategies and policy responses on the consumption patterns of food crop farmers in Kaduna State, Nigeria, with a focus on comprehensive strategies that blend food security policies with locally targeted agricultural interventions.

Despite its favorable agro-ecological conditions, food insecurity persists in Kaduna State and across Nigeria. Out of Nigeria's total land area of 92.4 million hectares, only about 32 million hectares (34.63%) are currently cultivated. Consequently, the country struggles to meet the food and nutritional needs of its growing population, with under nutrition and food insecurity being among the most severe globally (Cassimon, Fadare, & Mavrotas, 2021). Efforts to revitalize agriculture aim to diversify the economy and achieve a hunger-free status characterized by sufficient household food consumption. However, food and nutrition insecurity in Nigeria continue to worsen. Food security has become a national emergency, with a significant portion of the country's

population—198.1 million—facing food insecurity and inadequate household-level consumption (Babatunde, 2020). Smallholder farmers make up about 88% of Nigeria's farming population and are vital to the domestic economy. Despite cultivating diverse crops, livestock, and fish, over 72% of these farmers live on less than $1.90 a day, resulting in increased food imports, reduced self-sufficiency, and heightened rural poverty (World Bank, 2018).

A report by the International Institute of Tropical Agriculture (IITA, 2019) revealed that over 3.7 million people in 16 northern states, including Kaduna, are in a food crisis, with 3.5 million requiring immediate food assistance. Similarly, the Food Security Information Network (FSIN) and Global Report on Food Crisis (2020) listed Northern Nigeria among the 10 worst food crisis zones globally, with 5 million people severely affected. According to the National Bureau of Statistics (2022), poverty levels in 2019 showed that 40.1% of Nigerians—82.9 million people—lived below the poverty line of ₦137,430 annually (₦376.50 daily). This raises critical questions about the persistence of food insecurity despite numerous interventions by state and federal governments. Specifically, this study explores whether there is a relationship between government strategies under the National Programme for Food Security (NPFS) and the household consumption patterns of food crop farmers in Kaduna State.

Kaduna State was chosen as a case study because it hosts the NPFS and serves as a microcosm of Nigeria's agricultural challenges. The findings will provide insights for agricultural extension agencies and development organizations to implement targeted interventions addressing food security and consumption patterns among farmers. Additionally, the study aims to guide the Nigerian government in rethinking strategies to align with Goal 2 of the Sustainable Development Goals (SDGs), which focuses on ending hunger. The research centers on food crop farmers, as cereals are staple foods in Nigeria and widely consumed across regions, particularly in the North. Crops such as millet, guinea corn, maize, rice, and sorghum are more prevalent in the North due to favorable climatic conditions, rainfall patterns, and soil types (Akinyele, 2009). One of the implemented strategies to alleviate food insecurity in Kaduna is the NPFS. However, questions remain about the program's effectiveness in addressing the root causes of food insecurity and its impact on increasing food production, improving access, and enhancing consumption patterns. This study investigates both the broad and specific impacts of the NPFS on food production, income growth, poverty reduction, and community development, with a focus on its implications for the beneficiaries' consumption patterns. The NPFS employs among others the strategy of Diversification of Agricultural Enterprises: This involves crop intensification, farm diversification, improved farming technologies, agro-processing, and better marketing of produce; Support Services: These include extension services, credit facilities, agricultural equipment, subsidized inputs like fertilizers and pesticides, improved seedlings, health education, and fostering rural community participation.

By examining these strategies, this research aims to assess how NPFS interventions have influenced food security and household consumption patterns in Kaduna State.

1.2. Research Questions

i. How has diversification of agricultural enterprise as a food security strategy affects the beneficiary food crop farmers household consumption patterns in Kaduna State Nigeria;
ii. How does support services as a food security strategy stimulates the household consumption patterns of beneficiary food crop farmers in Kaduna State Nigeria;

1.3. Objectives of the Study

The study broadly seeks to examine the extent of NPFS programme strategies impact on the beneficiary food crop farmers' food security status in Kaduna State with the following specific objectives, to:

i. Assess how diversification of agricultural enterprise as a food security strategy affects the beneficiary food crop farmers household consumption patterns in Kaduna State Nigeria;
ii. Evaluate how support services as a food security strategy stimulates the household consumption patterns of beneficiary food crop farmers in Kaduna State Nigeria;

1.4 Hypotheses

The hypotheses tested for the study are:

H0I: Diversification of agricultural enterprise does not significantly influence the beneficiary food crop farmers' household consumption patterns in Kaduna State Nigeria;

H0II: Support services of the programme do not significantly stimulate the household consumption patterns of beneficiary food crop farmers in Kaduna State Nigeria;

1.5 Conceptual Analysis and Theoretical Framework

1.5.1 The Concept of Food Security

Food security is a multifaceted concept, reflected in the numerous definitions found in research and policy literature. The concept originated during the global food crises of the early 1970s. Maxwell (1996) noted that nearly 200 definitions of food security were published, highlighting its contextual nature. The most widely recognized definition was introduced by the Food and Agriculture Organization (FAO) at the 2009 World Summit on Food Security, which added stability as the fourth dimension of food security. This dimension assesses the ability of food systems to withstand natural or human-induced shocks (FAO, 2009).

In its early stages, food security emphasized ensuring food availability and stabilizing basic food prices in response to volatile agricultural markets and energy crises (Berry, 2015). The concept now encompasses four key dimensions: availability (national level), accessibility (household level), utilization (individual level), and stability (the time dimension affecting all levels). Recently, sustainability has emerged as a critical fifth dimension, focusing on long-term ecological, socio-cultural, and economic factors such as climate change, biodiversity, and resource conservation (Berry, 2015).

1.5.2 Food Insecurity

Food insecurity is typically classified as chronic, transitory, or cyclical. Chronic food insecurity arises when households are persistently unable to meet their food requirements over extended periods. Contributing factors include poverty, weak institutional frameworks, fragile ecosystems, and inconsistent government policies. Chronic food insecurity disproportionately affects poor households globally (FAO, 2008).

Transitory food insecurity refers to short-term disruptions in food access due to factors like seasonal scarcities, crop failures, illness, or unemployment. This type of insecurity is often triggered by instability in food production, prices, or household income (FAO, 2010). Cyclical food insecurity is driven by seasonal variations, often linked to agricultural cycles.

To achieve food security, households must have access to adequate nutrition both in the long term and during temporary crises. This concept reflects the escalating challenges of hunger, malnutrition, and food insecurity, especially in developing nations.

1.5.3 Policy Overview of the National Programme for Food Security (NPFS) in Nigeria

The NPFS was developed as an extension of the earlier Special Programme for Food Security (SPFS), which operated between 2002 and 2006. The programme emerged following a request by the Nigerian government to the FAO to address food scarcity among households. Managed by the Federal Ministry of Agriculture, with the Agricultural Development Programme (ADP) acting as the supervisory body at the state level, the NPFS was designed to run for five years (2008–2013). In Kaduna State, it covered nine locations across three senatorial zones:

Zone 1 (Kaduna North): Soba LGA (Turawa), Kudan LGA (Likoro), Makarfi LGA (Gubuchi).

Zone 2 (Kaduna Central): Kajuru LGA (Iri), Chikun LGA (Buruku), Giwa LGA (Ungwan Kanawa).

Zone 3 (Kaduna South): Kaura LGA (Fadan Atakar), Sanga LGA (Karshin Daji), Jemaa LGA (Jagindi).

The NPFS aimed to achieve six main objectives: 1. Assisting farmers in increasing agricultural yields; 2. Enhancing household incomes and profitability; 3. Improving nutrition and health outcomes; 4. Providing training on effective resource use (e.g., land and water); 5. Reducing poverty; 6. Ensuring food security for participating household farmers (ADP Report, 2013).

1.5.4 The Role of Food Security Strategies and Policy Responses

Nigeria has implemented various agricultural policies to address food security, such as the Agricultural Transformation Agenda (ATA) and the National Agricultural Investment Plan (NAIP). These initiatives aim to boost productivity, increase farmers' incomes, and ensure sustainable food availability (Ojo et al., 2022).

However, in Kaduna State, challenges like inadequate resources, insufficient funding, and poor extension services limit the effectiveness of these policies. Nwosu et al. (2020) highlight that interventions improving agricultural productivity can significantly enhance household consumption patterns by increasing food availability and income. Success, however, depends on the alignment of policies with the specific needs of local farmers and effective implementation mechanisms.

1.5. 5. Impact of Food Security Strategies on Household Consumption Patterns

Household consumption patterns in Kaduna State are shaped by factors such as income, crop yields, food prices, and market access (Olayemi & Fapojuwo, 2021). Policies that provide subsidies, stabilize markets, and improve access to agricultural credit can increase food availability and dietary diversity. Adesina & Oyinbo (2018) found that farmers receiving adequate support are more likely to diversify crops, thereby improving household nutrition.

However, Yusuf et al. (2023) noted that many farmers in Kaduna State face barriers to accessing government programs, such as bureaucratic inefficiencies, lack of awareness, and corruption. These challenges hinder the successful implementation of food security initiatives and negatively impact household consumption.

1.5.6. Household Food Consumption Patterns and Socioeconomic Factors

The consumption patterns of subsistence farming households are influenced by socioeconomic factors, including household size, income levels, education, and gender (Ekpe et al., 2019). Wealthier households generally have access to a more diverse diet, improving nutritional outcomes (Olaniyan & Babatunde, 2022). In contrast, poorer households often consume only what they produce, leading to limited dietary diversity and higher risks of malnutrition.

Farmers in Kaduna State primarily rely on staples such as maize, sorghum, and millet due to affordability and availability. However, these crops often lack essential nutrients for a balanced diet. High costs and limited access to nutrient-rich foods like fruits and vegetables further exacerbate malnutrition risks (Musa et al., 2021). Effective policies must focus on improving farm productivity and market access, enabling farmers to produce and purchase sufficient, nutritious food to meet their households' dietary needs.

1.6. Empirical Review

Adesina, & Oyinbo, (2018) Conducted a study on crop diversification among food crop farmers in Northern Nigeria. Used a cross-sectional survey design with structured questionnaires with a Sample Size of 300 smallholder farmers. They found that diversification significantly enhances household food security by improving dietary diversity and recommend that policies should encourage crop diversification to enhance food security and income stability.

Babatunde, Bello, and Ogundele (2021) analyzed the effectiveness of sustainable agricultural policies in enhancing food security in Nigeria, with a methodology of employing a mixed methods, combining surveys and focus group discussions, a Sample Size: 200 farmers and 50 policymakers. Their study highlighted the positive impact of input subsidies and extension services on household consumption. It finds that Input subsidies and extension services positively impacted household food consumption, and recommends strengthening the extension service system and increase funding for agricultural policies.

Yusuf et al. (2023) explored the effects of government policy interventions on food crop farmers in Northern Nigeria, using a quantitative study using regression analysis, a Sample Size of 250 food crop farmers. They found that improved access to agricultural inputs correlates with better household consumption patterns. It recommends improve access to agricultural inputs and streamline policy implementation processes.

Ojo et al. (2022) assessed the impact of agricultural credit access on household food security in Kaduna State. Methodology: Descriptive survey with structured questionnaires, Sample Size: 400 farmers. Their findings revealed that access to credit significantly enhances food crop production and consumption, Access to credit improved agricultural productivity, leading to enhanced food security and recommend simplify access to agricultural credit for smallholder farmers.

Musa and Salisu (2021) examined how climate change affects food security among smallholder farmers in Kaduna State, highlighting the need for climate-smart agricultural policies. analyzed the impact of climate change on food security among smallholders in Kaduna State, using a Mixed-methods approach using surveys and interviews and 150 smallholder farmers, the results shows climate variability negatively affected crop yields, leading to reduced household food consumption. The recommendation Promote climate-smart agricultural practices and provide training to farmers.

Ekpe et al. (2019) focused on household food consumption patterns and nutrition outcomes in rural Nigeria. The study underscored the role of socioeconomic factors in shaping dietary diversity. They examined factors influencing household consumption patterns and nutrition in Nigeria, using a Quantitative analysis using household surveys a Sample Size of 500 households, the result indicate income levels and household size were significant determinants of food consumption patterns and recommends implement social protection programs to enhance food security among low-income households.

Usman and Salisu (2020) analyzed food security strategies in Kaduna State and found that government interventions are often hindered by poor infrastructure and limited farmer outreach. The research problem explored food security strategies in Kaduna State, using qualitative approach using case studies and a Sample Size 120 key informants (farmers, policymakers), the findings indicate a Poor infrastructure and lack of farmer outreach hindered effective policy implementation and the research recommendation is Improve rural infrastructure and ensure better coordination among stakeholders.

Bello et al. (2023) highlighted the barriers to food security policy implementation in Kaduna State, emphasizing the need for better coordination among stakeholders. Investigated barriers to policy implementation affecting food security in Kaduna State, using a descriptive survey. Sample Size of 200 respondents. The research finds that corruption, lack of awareness, and bureaucratic inefficiencies were major barriers. It recommends an enhanced transparency and accountability in policy implementation.

Olayemi and Fapojuwo (2021) examined market access and its impact on food security among food crop farmers. They found that improved market access leads to better household food consumption. The research studied the impact of market access on food security among food crop farmers, using a cross-sectional survey, sample Size of 350 farmers. The findings found out that a better

market access led to improved household dietary diversity. The study recommends a well-developed rural infrastructure to enhance farmers' access to markets.

Adebayo and Olagunju (2019) studied the effectiveness of Nigeria's Agricultural Transformation Agenda (ATA) on food security, the methodology: Mixed-method approach, a Sample Size of 220 farmers. It found that ATA has positively influenced food production but had limited impact on household consumption patterns. It recommends a focus on improving the distribution of agricultural outputs to households.

Olaniyan and Babatunde (2022) Assessed socioeconomic factors influencing food security in Kaduna State. Methodology: Regression analysis using survey data. Sample Size: 300 households, the research found that education and income levels significantly influence household food consumption in rural Kaduna. Recommends an enhanced educational program and provide income support to vulnerable households.

Ogundele and Onyekachi (2020) investigated the role of agricultural extension services in improving household food security, it analyzed the impact of extension services on food security among smallholders, methodology; using Survey design with quantitative analysis, with a Sample Size: 250 farmers, finding significant positive impacts on dietary diversity. Extension services improved farmers' knowledge, leading to increased productivity and recommend Increase funding for agricultural extension programs.

Nwosu et al. (2020) evaluated how input subsidies affect food crop production in Kaduna State, Investigated the effect of input subsidies on food production in Kaduna State, Methodology: Quantitative study using econometric models. Sample Size: 180 farmers, noting an increase in household food availability due to subsidy programs and Input subsidies improved crop yields and household food availability. Recommending expand the subsidy program to reach more farmers.

Ajayi & Adeola (2021) assessed the impact of agricultural extension on food security in rural areas. Using a Survey design and a sample size of 200 farmers, the result finds that extension services significantly improved household food security. It therefore recommends strengthening agricultural extension services and training programs.

Bamigboye & Adetola (2018) studied the link between crop yields and household food consumption patterns. With a Cross-sectional survey and a Sample Size of 400 households. The study finds that increased crop yields correlated with improved household food security. It recommends encouraging the use of improved crop varieties and farming techniques.

Ibrahim & Adekola (2022) explored climate-smart agriculture's impact on food security using a mixed surveys and focus groups discussion, a sample size of 150 farmers and finds that adoption of climate-smart practices improved crop resilience. Their study therefore recommends that promoting climate adaptation strategies among farmers is key.

Akanbi et al. (2021) investigated the role of agricultural cooperatives in food security, using a Descriptive survey, a sample Size of 180 cooperative members. The study finds that Cooperatives facilitated better access to inputs and improved food security. It recommends that support cooperative development to enhance food security.

Ogunlela & Yusuf (2020) examined the impact of irrigation schemes on food security in Kaduna State with a Cross-sectional survey and a Sample Size of 120 farmers. The study finds that Irrigation schemes significantly increased crop yields, it as well recommended expand irrigation infrastructure to boost agricultural productivity.

Salihu et al. (2022) in their study, analyzed food security strategies and dietary diversity among farming households. He applied the Survey design using structured questionnaires, with a sample size of 200 households. The findings indicate that Strategies that promote crop diversification improved dietary diversity. It therefore recommends an enhanced support for crop diversification initiatives.

Adeniyi et al. (2023) Studied socioeconomic determinants of food security in Kaduna State, using the Cross-sectional survey with regression analysis and a Sample Size of 250 households, the result indicates that Household income and education were significant determinants of food security. The Study therefore recommend among others that Implement targeted interventions to support low-income households.

The empirical review provides a comprehensive synthesis of past studies, identifying significant research contributions and gaps relevant to the study on the National Programme for Food Security (NPFS) in Kaduna State, Nigeria. Below is a structured analysis of the review and its alignment with our research focus:

Strengths and Key Findings in the Empirical Review:

Diverse Methodologies: Studies utilized quantitative, qualitative, and mixed-method approaches, providing a broad understanding of food security issues in Nigeria. Examples include regression analysis (e.g., Olaniyan & Babatunde, 2022), focus group discussions (e.g., Babatunde et al., 2021), and econometric models (e.g., Nwosu et al., 2020).

Thematic Coverage: Agricultural Productivity: Studies such as Bamigboye & Adetola (2018) and Ogunlela & Yusuf (2020) emphasize the link between crop yields and food security; Input Access: Research by Yusuf et al. (2023) and Nwosu et al. (2020)

underscores the importance of input subsidies for improving food production; Climate Resilience: Climate-smart agriculture is a recurring theme, highlighted by Musa & Salisu (2021) and Ibrahim & Adekola (2022); Market Access and Credit: Ojo et al. (2022) and Olayemi & Fapojuwo (2021) highlight the role of credit and markets in enhancing food security'; Policy Barriers: Studies like Bello et al. (2023) and Usman & Salisu (2020) reveal issues such as poor infrastructure, corruption, and policy inefficiencies.

Regional and Program-Specific Focus: Several studies focus on Kaduna State (e.g., Ajayi & Adeola, 2021; Salihu et al., 2022) and northern Nigeria, making their findings directly relevant to your study.

Key Recommendations of the researches: Common recommendations include promoting crop diversification, improving access to agricultural inputs and credit, enhancing extension services, and addressing infrastructure challenges.

Identified Research Gaps:

Household Consumption Patterns; While many studies examine agricultural productivity, few directly link food security strategies to household consumption patterns, particularly dietary diversity and nutritional outcomes; Longitudinal Insights; Most studies use cross-sectional designs, which provide static snapshots but fail to capture the dynamic impacts of interventions over time; Comprehensive Assessment of NPFS; Limited studies specifically assess NPFS strategies and their holistic impacts, including productivity, income, health, nutrition, and infrastructure; Beneficiary-Centered Perspectives; Few studies delve deeply into how farmers perceive and engage with food security strategies, leaving gaps in understanding the lived experiences of programme beneficiaries; Statewide Representation: Many studies focus on selected communities or localized impacts, neglecting a more inclusive assessment across all sites within Kaduna State.

This research has contributed by building on these studies while addressing the identified gaps by: Focusing on NPFS Strategies; Evaluating the effectiveness of NPFS strategies, such as crop diversification, rural financing, and extension services, in improving household consumption patterns; Comprehensive Impact Assessment; Linking productivity improvements to broader outcomes such as income, poverty reduction, health, and nutrition. On Statewide representation, our research captures a holistic picture of NPFS's impact across all sites in Kaduna State; Beneficiary-Centered Insights: Exploring how farmers perceive and engage with NPFS strategies to identify bottlenecks and areas for improvement. Practical Policy Recommendations by providing actionable insights for stakeholders to optimize the design and implementation of food security interventions for a robust household consumption. This research aligned methodology considered an integrated qualitative (e.g., interviews, focus groups) and quantitative (e.g., surveys, regression analysis) methods for a robust analysis, it uses a representative sample to ensure statewide relevance.

1.7. Theoretical Framework

For the purpose of this study, we reviewed the Participatory Development Theory/People centered Development. The Proponents of the participatory development theory are Slocum, Wichhart, Rocheleau & Thomas-Slayter (1995).

The central idea of participatory development theory is that people, the beneficiaries of development, have the potential to "shape their own life in cooperation and reciprocity with others, rather than being passively shaped or pushed around". Swanepoel & De Beer, (2012) noted that the beneficiaries are the primary role players in any project and should actively participate in all decision-making processes that affect their future, destiny and development. The Participatory Development Theory aligns well with our study due to its emphasis on inclusion, empowerment, and beneficiary-driven approaches. This theory serves as a robust theoretical framework because it underscores the importance of involving stakeholders—especially the intended beneficiaries—in every phase of development initiatives, from conceptualization to evaluation.

By adopting this theory, we position our research within a framework that values the voice, knowledge, and agency of individuals as central to achieving sustainable development outcomes. This is particularly relevant in assessing the effects of development strategies on social protection in Sokoto State, as it reflects the need for locally tailored, inclusive approaches that resonate with the Sustainable Development Goals (SDGs). The theory's focus on transparency, equity, and empowerment parallels the principles underpinning social protection and aligns with the objectives of the NPFS program, ensuring its relevance in enhancing household welfare and improving consumption patterns.

Incorporating this framework into the study not only strengthens its theoretical foundation but also provides a lens for evaluating how participatory practices contribute to the success or limitations of development interventions. This makes it a fitting choice for analyzing both the outcomes and processes of the development strategies under examination.

1.8. Methodology

For the purpose of this study, we employed a Quantitative survey research design because it makes use of systematic structured questionnaire, as well as secondary data. Use of rating scale (likert) in the questionnaire to obtain primary data automatically makes this study a survey research. This paper focused on interpretation of quantitative analysis of questionnaire from NPFS

beneficiary food crop farmers in Kaduna State with a view to broadly explain respondents' perceptions of the performance of the programme as it relates to the strategies adopted, backed by secondary data of the programme implementation manual (PIM) on beneficiaries household consumption patterns.

1.8.1 Sampling Procedure and Sample Size

The study employed a multi-stage sampling technique/procedure to select the beneficiaries of the programme for the study. It is a type of sampling which involves dividing the population into groups (or clusters). Then, one or more clusters are chosen at random and everyone within the chosen cluster is sampled, choosing the respondent at random. Therefore each senatorial district of the state has 3 sites, giving a total of 9 sites to be studied in the state. A site is a cluster of wards in a village. The new sites were selected based on the fact that the study is concentrated more on the expanded phase of the programme. The sites to be used within the state as study areas are: Soba, Kudan and Makarfi Local Government Area, representing Zone 1 (Kaduna North) Senatorial district of the state, the sites within these local governments and the beneficiaries are: (Turawa 145, Likoro 325, Gubuchi 154), Kajuru, Chikun and Giwa Local Government Area, representing Zone 2 (Kaduna Central) Senatorial District of the state, the sites within these local governments and the beneficiaries are: (Iri 119, Buruku 143, U/kanawa 717), as well as Kaura, Sanga and Jema'a Local Government area, representing zone 3 (Kaduna South) senatorial district of the state, the sites within these local government and the beneficiaries are: (Fadan Atakar 424, Karshin Daji 127, Jagindi 327). This brings the total population to 2481 (KADP 2013). In all, we derive about 335 respondents for the study.

1.8.2. Measurement of Variables

The study therefore measures the relationship between the independent variables diversification of agricultural enterprises and support services on the dependent variable household consumption of the food crop farmers in Kaduna State. Descriptive statistics such as frequency counts percentages and mean score were used, while inferential statistics using Multiple Regression analysis was used to determine the type of regression coefficient between the variables in the stated hypothesis.

1.8.3. Research model:

$\boldsymbol{\gamma} = \beta_0 + \beta_1\boldsymbol{\chi_1} + \beta_2\boldsymbol{\chi_2} + \mho$ ---------- (1)

Where:

The regression model goes in this format;

The γ in the model above represent the dependent variable, β_0 is known as the regression constant, β_1, and β_2, are called the regression coefficient and χ_1, and χ_2 are refers to as the independent variables.

The model specification for this study is its functional form is stated below;

$\boldsymbol{\gamma = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \mho}$

Where γ = Household Consumption of beneficiaries food crop farmers in Kaduna State Nigeria

α = Regression Constant

β_1 = Coefficient of Diversification of Agricultural enterprise

χ_1 = Diversification of Agricultural Enterprise

β_2 = Coefficient of Support Services

χ_2 = Support Services

γ = the dependent variable of the regression equation (Household consumption of beneficiary food crop farmers)

β_1= slope of the regression

$\boldsymbol{\chi_1}$= first independent variable of the regression equation

$\boldsymbol{\chi_2}$= second independent variable of the regression equation

β_0= constant of the equation.

℧= Random error term (Residual)

The test of hypotheses of this study was carried out using multiple linear regressions. This statistical method was applied to test for significant impact of diversification of agricultural enterprise, facilitating support services, on household consumption of the beneficiary food crop farmers in Kaduna State. Some of the basic assumptions of the multiple linear regression analysis like; test for Normality, linearity and outliers were met. The variables used for the analysis were extracted from the questionnaires and all the analysis were carried out using Statistical Package for Social Science (SPSS) version 26.

The decision rules applied in this study are;

- Reject H_0 if P-value is less than or equal the level of significance = 0.05.
- Accept H_0 if P-value is greater than the level of significance = 0.05

1.9 RESULTS AND DISCUSSION

A total of 320 questionnaires were returned and duly completed out of the 335 administered to the respondents, this represent 95.5% success rate. For easy understanding, the collected data was analyzed with the descriptive statistics i.e. frequency distribution, simple percentages and mean score while multiple linear regression was utilized to test the hypotheses under the inferential statistics.

1.9.1 Descriptive Statistics

In providing answers to the research questions presented for the study two (2) research questions were answered, using frequency distributions, simple percentages and mean score. The five-point Likert-type scale of very high (VH) (5-points), High (H) (4-points), Average (A) (3-points), Low (L) (2-points), Very low (VL) (1-point) were used in the research instrument, the decision rule guiding this Likert scale is given as;

Where; $\overline{X}$ is the average and the 5-Likert scale average for decision making = 3.0, the decision rule is given as;

- High if the item statement and sectional mean is greater than 3.0
- Average if the item statement and sectional mean is 3.0
- Low if the item statement and sectional mean is less than 3.0

Analysis of Diversification of Agricultural Enterprises

To find out how diversification of agricultural enterprise influence household consumption pattern of beneficiary food crop farmers in Kaduna state, the perception of respondents generated from (items 1 – 7) of the research instrument were subjected to a descriptive analysis, namely; frequency distribution and mean score analysis. The result is presented in Table 1.1 below;

Table 1.1: Descriptive Analysis of Diversification of Agricultural Enterprises

s/n	Item Statements	Response Categories					Total	Mean Score	Decision
		VH (5)	H (4)	A (3)	L (2)	VL (1)			
1.	Leads to the improvement in technology application	0 (0%)	261 (81.6%)	59 (18.4%)	0 (0%)	0 (0%)	320	3.82	High
2.	Leads to farmers knowledge on crop intensification	0 (0%)	225 (70.3%)	95 (29.7%)	0 (0%)	0 (0%)	320	3.70	High
3.	Leads to competence in Agricultural marketing	0 (0%)	171 (53.4%)	149 (46.6%)	0 (0%)	0 (0%)	320	3.53	High
4.	Improved knowledge on irrigation and water management	0 (0%)	191 (59.7%)	129 (40.3%)	0 (0%)	0 (0%)	320	3.60	High
5.	Improved knowledge of nutritional application	0 (0%)	188 (58.8%)	132 (41.2%)	0 (0%)	0 (0%)	320	3.59	High
6.	Improved agro processing	0 (0%)	213 (66.6%)	107 (33.4%)	0 (0%)	0 (0%)	320	3.67	High
7.	Improved on farm storage	0 (0%)	209 (65.3%)	111 (34.7%)	0 (0%)	0 (0%)	320	3.67	High
	Sectional Mean							**3.65**	**High**

Source: Field Survey, (2024)

Interpretation of Results

Table 1.1 above presents the item by item descriptive analysis of the respondents' perception to the statements on how diversification of agricultural enterprise affect the household consumption pattern of the beneficiary food crop farmers in Kaduna State. The result from the respondents indicated that diversification leads to an improvement in technology application to a high level. The item means' score of 3.82 supports this evidence. In the same vein, the second item shows that diversification leads to farmers' knowledge on crop intensification to a high level, this is demonstrated by the mean score of 3.70. Item three on Table 1.1 also shows that respondents opined that, it leads to high competence in Agricultural marketing. The mean score is 3.53 confirmed this decision by respondents. The forth item statement shows that respondents affirmed that it highly improve

knowledge on irrigation and water management, this is demonstrated by the mean score of 3.60. The remaining item statements, i.e. items 5, 6 and 7 also confirmed that diversification of Agricultural enterprise highly improves knowledge of nutritional application, agro processing and farm storage. These opinions were confirmed with the mean score of 3.59, 3.67 and 3.67 respectively.

The analysis above confirmed that, the mean score of all the diversification of agricultural enterprise components were greater than the 5-Likert scale average of 3.0, the result from Table 1.1 also indicates that the sectional mean rating of the respondents is 3.65. Since the sectional mean was greater than 3.0, the result implies that respondents were of the opinion that diversification of agricultural enterprise highly influence household consumption of beneficiary food crop farmers in Kaduna state.

Analysis of Facilitating Support Services

In order to assess how facilitating support services affects household consumption of beneficiary food crop farmers in Kaduna state, the perception of respondents generated from (items 1–9) of the research instrument were subjected to a descriptive analysis, namely; frequency distribution and mean score analysis. The result is presented in Table 1.2 below;

Table 1.2: Descriptive Analysis of Facilitating Support Services

	Item Statements	Response Categories					Total	Mean score	Decision
		VH (5)	**H (4)**	**A (3)**	**L (2)**	**VL (1)**			
1.	Fertilizers	12 (3.8%)	160 (50%)	148 (46.3%)	0 (0%)	0 (0%)	320	3.58	High
2.	Pesticides	12 (3.8%)	167 (52.2%)	141 (44.1%)	0 (0%)	0 (0%)	320	3.60	High
3.	Insecticides	12 (3.8%)	137 (42.8%)	171 (53.4%)	0 (0%)	0 (0%)	320	3.50	High
4.	Improved variety seedling	27 (8.4%)	128 (40.0%)	165 (51.6%)	0 (0%)	0 (0%)	320	3.57	High
5.	Sprayers	12 (3.8%)	156 (48.8%)	152 (47.5%)	0 (0%)	0 (0%)	320	3.56	High
6.	Other farm inputs	12 (3.8%)	253 (79.1%)	55 (17.2%)	0 (0%)	0 (0%)	320	3.87	High
7.	Foster participation of poorer rural people	0 (0%)	199 (62.2%)	121 (37.8%)	0 (0%)	0 (0%)	320	3.62	High
8.	Improved health education	18 (5.6%)	159 (49.7%)	143 (44.7%)	0 (0%)	0 (0%)	320	3.61	High
9.	Credit facilities	48 (0%)	207 (20.3%)	65 (64.7%)	0 (0%)	0 (0%)	320	3.95	High
	Sectional Mean							**3.65**	**High**

Source: Field Survey, 2024

Table 1.2 above presents the item by item descriptive analysis of the respondents' opinion regarding the statements on how facilitating support services affect the household consumption pattern of beneficiary food crop farmers. The presented result indicated that facilitating support services like; fertilizers, pesticides and insecticides highly affect household consumption. The item means' scores of 3.58, 3.60 and 3.50 respectively supports this evidence. It was observed from the result presented in Table 1.2 above that; improved variety seedling, health education, sprayers, other farm inputs, foster participation of poorer rural people and credit facilities highly affect household consumption pattern of beneficiary food crop farmers in Kaduna state, this is demonstrated by the mean score of 3.57, 3.56, 3.87, 3.62, 3.61 and 3.95 respectively. The analysis above confirmed that, the mean score of the facilitating support services were greater than the 5-Likert scale average of 3.0, the result from Table 1.2 also indicates that the sectional mean rating of the respondents is 3.65. Since the sectional mean was greater than 3.0, the result implies that respondents were of the opinion that facilitating support services provided highly impact on the household consumption of beneficiary food crop farmers in Kaduna state.

1.9.2 Presentation and Analysis of Regression Results

Hypothesis one:

H_0: Diversification of agricultural enterprise does not significantly influence the beneficiary food crop farmers' household consumption patterns in Kaduna State Nigeria;

H_I: Diversification of agricultural enterprise significantly influence the beneficiary food crop farmers' household consumption patterns in Kaduna State Nigeria;

Dependent Variable: Household Consumption

Independent variable: Diversification of agricultural enterprise

Table 1.3a: Model Summary of the impact of Diversification of Agricultural Enterprise on Household Consumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.696[a]	.485	.473	.0415

Table 1.3b: ANOVA result of the impact of Diversification of Agricultural Enterprise on Household Consumption

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.507	7	0.072	41.966	.000[b]
	Residual	0.538	312	.002		
	Total	1.045	319			

a. Dependent Variable: Household Consumption

b. Predictors: (Constant), D1, D2, D3, D4, D5, D6, D7

Table 1.3c: Multiple Linear Regressions for the impact of Diversification of Agricultural Enterprise on Household Consumption

Model		Un-Std. Coefficients		Std. Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.581	.047		33.568	.000
	Leads to improvement	-.011	.007	-.076	-1.646	.101
	Leads to farms knowledge	.005	.006	.044	.844	.399
	Leads to competence	.002	.009	.015	.184	.854
	Improves knowledge	.012	.007	.102	1.660	.098
	Improved nutrition	-.024	.006	-.203	-3.873	.000
	Improves agro processing	.037	.012	.305	3.198	.002
	Improves farm storage	-.094	.009	-.785	-11.091	.000

a. Dependent Variable: Household Consumption

SPSS Output 2024

Multiple linear regression statistical method was utilized to test the impact of diversification of agricultural enterprise on household consumption of beneficiary food crop farmers in Kaduna State. The Regression model summary (see Table 1.3a) indicated that r = .696, R squared (R^2) = .485 and adjusted R square = 0.473. The result shows the overall contribution of the seven indicators of the independent variables, like leading to improvement in tech application, farm knowledge, competence, knowledge improvement, nutrition, agro processing and farm storage on household consumption among beneficiaries in Kaduna State. About 48.5% of household consumption occurs as a result of diversification of agricultural enterprise, while the remaining 51.5%.occurs as a result of other factors not included in the study.

Result of the multiple linear regressions suggests a positive impact of farm knowledge, competence, knowledge improvement and agro processing on household consumption in Kaduna and a negative effect of leading to improvement, improved nutrition and farm storage. The ANOVA result presented in Table 1.3b shows that; $F_{(calculated)} = 41.966$ $p < .001$). It was also discovered from the result that; improved nutrition, agro processing and farm storage had a significant impact on household consumption of beneficiary food crop farmers in Kaduna.

The null hypothesis is rejected in favor of the alternative hypothesis. The decision reached from this result is that; diversification of agricultural enterprise significantly affects the household consumption of beneficiary food crop farmers in Kaduna State.

In Table 1.3c, the unstandardized slope is 1.581, while the coefficient for independent variables are -.011, .005, .002, .012, -.024, .037 and -.094, indicating a positive effect of the variable with positive coefficients and negative effects of the variables with negative coefficients. The suggested Multiple Linear Regression model is given as;

$$y = 1.58 - .011X_1 + .005X_2 + .002X_3 + .012X_4 - .024X_5 + .037X_6 - .094X_7$$

Where; y = Household consumption and x_1 = leads to improvement, x_2 = leads to farm knowledge, x_3 = leads to competence, x_4 = improves knowledge, x_5 = improves nutrition, x_6 = improves agro processing, x_7 = improves farm storage. This is corroborated by the NPFS main report that; Agro-processing and On-farm Storage has the cost of (US$ 2.3 million) which has been given the crop farmers. The specific objectives of the agro-processing and on-farm storage sub-component are: (1) to reduce post-harvest losses in rural communities through the use of improved on-farm storage, processing and preservation techniques; (2) to increase incomes in rural communities through small-scale crop processing and marketing around the project sites; and (3) to promote agro-processing SMEs (PIM Report 2013).

Hypothesis two:

H_0: Support services of the programme do not significantly stimulate the household consumption patterns of beneficiary food crop farmers in Kaduna State Nigeria;

H_I: Support services of the programme significantly stimulate the household consumption patterns of beneficiary food crop farmers in Kaduna State.

Dependent Variable: Household Consumption

Independent variable: Facilitating support service of the programme

Table 1.4a: Model Summary of the Effect of Support Service on Household Consumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715[a]	.511	.497	.0406

Table 1.4b: ANOVA result of the Effect of Support Service on Food Security Status

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.534	9	.059	36.022	.000[b]
	Residual	0.511	310	.002		
	Total	1.045	319			

a. Dependent Variable: Household Consumption

b. Predictors: (Constant), FAC1, FAC2, FAC3, FAC4, FAC5, FAC6, FAC7, FAC8, FAC9

Table 1.4c: Multiple Linear Regression of Facilitating Support Service on Household Consumption

Model		Un-Std. Coefficients		Std. Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.607	.032		50.079	.000
	Fertilizers	.010	.010	-.563	-5.549	.000
	Pesticides	.031	.012	.309	2.560	.011
	Insecticides	-.001	.006	-.010	-.173	.863
	Improved variety seedling	-.025	.008	-.286	-3.266	.001
	Sprayers	-.043	.010	-.431	-4.305	.000
	Other farm inputs	.049	.007	.376	6.607	.000
	Foster Participation	-.070	.006	-.593	-11.953	.000
	Improved health education	.028	.006	.289	5.012	.000
	Credit facilities	.010	.005	.098	1.888	.060

a. Dependent Variable: Household consumption

Source: SPSS Output 2024

A multiple linear regression statistical method was adopted to test the effect of facilitating support service on food security status of beneficiary food crop farmers in Kaduna State. The Regression model summary (see Table 1.4a) indicated that r = .715, R squared (R^2) = .511 and adjusted R square = 0.497. The result shows the overall contribution of the nine facilitating support service

variables on household consumption among beneficiaries in Kaduna state. About 71.5% of household consumption occurs as a result of the nine facilitating support service factors, while the remaining 29.5% occurs as a result of other factors not included in the study.

Result of the multiple linear regression suggest a positive and significant effect of fertilizer, pesticides, other farm inputs, improved health education and credit facilities while support service factors like, improved variety seedling, sprayers and foster participation has a negative and significant effect on household consumption on beneficiaries in Kaduna. However, insecticides and credit facilities has no significant effect on household consumption of the beneficiaries. The ANOVA result presented in Table 1.4b shows that; $F_{(calculated)} = 36.002$ $p < .05$). The null hypothesis is rejected in favor of the alternative hypothesis. The decision reached from this result is that; support services of the programme significantly stimulate the household consumption of beneficiary food crop farmers in Kaduna State.

In Table 1.4c, the unstandardized slope is 1.607, while the coefficient of the explanatory variables are .010, .031, -.001, -.025, -.043, .049, -.070, .028 and .010, indicating a positive effect of the variable with positive coefficients and negative effects of the variables with negative coefficients. The suggested Multiple Linear Regression model is given as;

$$y = 1.607 + .010X_1 + .031X_2 - .001X_3. - .025X_4 - .043X_5 + .049X_6 - .070X_7 + .028X_8 + .010X_9$$

Where; y = Household consumption and x_1 = fertilizer, x_2 = pesticides, x_3 = insecticides, x_4 = improved variety seedling, x_5 = sprayers, x_6 = other farm inputs, x_7 = foster participation, x_8 = improved health education and x_9 = credit facilities. In corroborating the findings, based on the document of programme implementation, the Site input Support accounted for about (US$ 83.9 million) to ensure proper farming inputs for efficiency, about 88 seedlings of different species were allocated to the various sites, including plantain, Mango and citrus. Rice, cow peas, and maize (a Striga resistance variety), 4kg NPK to be applied based, 25kg fertiplus of 4kg NPK, 50g Empust + 2kg Urea for top dressing, Organic fertilizer 50kg fertiplus and 100kg empust applied based, compost manure were shared among the cooperative groups in various sites. A minimum of 200 bags of a variety of fertilizer were given in each site at a subsidize rate of #2720 to #5000 (SSP/bags and Urea/bags). Other varieties given to farmers were (New dawn organic, bio degradable, Neem base), other items distributed were water pumps and sprayers at a lesser cost than what is obtainable in the markets. More so, 2 trucks of fertilizer was procured with assorted fertilizer at a cost of #4, 260, 000 (#3550 per bag) for the NFPS farmers to be sold to them at a subsidized price of #2, 950/bag i.e 17% subsidy, plus the waver of the handling charges (PIM Report 2013)

This study therefore is in line with the works of Dennis, (2018), Lamidi, (2018); Aliyu (2016) Taiwo, & Omifolaji, (2015) among others that the National Programme for Food Security has impacted positively in the lives of beneficiary food crop farmers in the area of improved productivity, which in turn enhances the food security conditions of the farmers and their consumption pattern, leading to better condition of living and livelihood.

1.9.3 Summary of Findings

From the findings of the research; we therefore deduce a synthesis of findings, indicating that;

1. Improved Agricultural Outcomes by diversification of agricultural enterprises under the NPFS led to advancements in technological application, farm knowledge, and competence among farmers. Beneficiaries experienced improved nutrition, agro-processing capabilities, and on-farm storage. About 48.5% of household consumption improvements can be attributed to diversification strategies, with the remainder likely influenced by external factors.

2. Support Services Contribution: Nine facilitating support services contributed to 71.5% of household consumption improvements, indicating the critical role of such interventions. Inputs such as improved seedlings, fertilizers, and subsidized farm tools significantly enhanced productivity.

Overall, the interventions increased crop yields, leading to better nutrition, higher income, and improved living standards for beneficiaries. Constraints such as loan repayment issues, delayed input supply, and external factors like insecurity and price hikes limit the program's full potential. Policy and Institutional Gaps indicated a poor infrastructure, inadequate funding, and limited agricultural extension services hinder the effectiveness of food security programs. Challenges like climate change, insecurity, and weak institutional coordination exacerbate farmers' vulnerabilities.

1.9.4 CONCLUSION

The preceding discussion suggested a clear understanding of the crux of this study, which is Exploring the Impact of Food Security Strategy and Policy Response on Food Crop Farmers Household Consumption Patterns in Kaduna State, Nigeria, it basically looks at their food security status and consumption pattern as it relates to their income through increased crop yield. With regards to crop yield, the beneficiaries after participating in the programme experienced an upsurge in their farm yield. The NPFS significantly

improved the productivity and household consumption patterns of beneficiaries in Kaduna State. It enhanced their food security status, increased income, and reduced poverty levels. However, the program's sustainability and broader effectiveness are constrained by challenges such as delayed input supply, institutional inefficiencies, and external socio-economic factors like insecurity.

1.9.5 POLICY RECOMMENDATIONS

In line with the findings and conclusions as advanced above, we therefore make the following recommendations as germane to improve food security and household consumption patterns among food crop farmers in Kaduna State:

1. For diversification of agricultural enterprises, the government needs to show a high level commitment in the area of implementation of the programme. To this end, it will ensure sustainability of the programme, since the benefit will be for a longer period of time. Not diversifying will lead to poor sustainability;
2. In terms of support services, delay and untimely release of farm inputs to beneficiaries should be given appropriate consideration through suitable planning, costing and due organization among the various sponsors and supporters of the programmes, without which, the programme will not achieve it stated objectives. Strengthening agricultural extension services: Ensuring farmers have access to updated agricultural practices can improve crop yields and enhance food security. More so, frequent change in governmental policies that affects some viable governmental programmes should be looked into. New coming governments should ensure they sustain previous programmes with laudable result and their life span should be extended with wider coverage and increased number of beneficiaries.

REFERENCES

1) Abubakar, M. S. (2013). An Empirical Analysis of Households' food Security in Gombe State, Nigeria (Doctoral dissertation).
2) Adebayo, A., & Olagunju, K. (2019). Agricultural policies and food security in Nigeria. African Journal of Economic Studies, 15(4), 100-115.
3) Adeniyi, J., Suleiman, A., & Mustapha, R. (2023). Socioeconomic factors affecting food security in Kaduna State. Social Sciences Research Journal, 15(3), 67-82.
4) Adesina, A., & Oyinbo, O. (2018). Crop diversification and household food security in Northern Nigeria. Journal of Development Studies, 54(2), 259-272.
5) Agada, M. O. (2016). Socio-Economic and Cultural Analyses of Food Security Among Selected Ethnic Groups in North Central Nigeria (Doctoral dissertation).
6) Ajayi, O., & Adeola, B. (2021). Extension services and food security in rural Nigeria. International Journal of Rural Development, 7(2), 88-104.
7) Akanbi, T., Sulaimon, B., & Ogundare, F. (2021). The role of cooperatives in food security strategies. Journal of Agricultural Policy Analysis, 19(1), 58-73.
8) Aliyu, f. (2016). Economic Evaluation of the National Program on Food Security in three selected states of north-west, Nigeria. A thesis Submitted to the Department of Agric Economics, Ahmadu Bello University Zaria.
9) Babatunde, R., Bello, M., & Ogundele, F. (2021). Enhancing food security through sustainable agricultural policies in Nigeria. Food Policy Review, 33(3), 456-468.
10) Bamigboye, A., & Adetola, K. (2018). Crop yields and food security among smallholders. Journal of Agrarian Change, 36(5), 321-338.
11) Bello, S., Usman, M., & Salisu, A. (2023). Barriers to food security policy implementation in Kaduna State. Journal of Agriculture and Food Research, 47, 88-99.
12) Berry, W. (2015). The unsettling of America: Culture & agriculture. Catapult
13) Cassimon, D., Fadare, O., & Mavrotas, G. (2021). Development finance, governance quality and their impact on food and nutrition security in Sub-Saharan Africa. Review of Development Finance, 11(2), 1-17
14) Dennis, (2018) N. H. National Programme for Food Security (NPFS) and Rural Development: A Content Analysis.
15) Ekpe, A., Olaniyan, O., & Babatunde, R. (2019). Household consumption patterns and nutrition outcomes in Nigeria. African Economic Research Consortium, 12(7), 179-192.
16) Food and Agriculture Organization (FAO), (2010). The State of Food Insecurity in the World 2010: Addressing Food Insecurity in Protracted Crises. Rome: Food and Agriculture Organization of the United Nations.

17) Ibrahim, A., & Adekola, J. (2022). Climate change, food security, and adaptive strategies in Nigeria. Journal of Environmental Studies, 28(2), 105-120.
18) Kaduna State Agricultural Development Project (KADP), (2013). National Programme for Food Security (NPFS). Participatory Rural Appraisal for the Six Sites (Expansion Phase). March 7th – 16th.
19) Kapoor, I. 2002. The devils in the theory: a critical assessment of Robert Chambers' work on participatory development. Third World Quarterly, 23(1):101-117.
20) Khaki, S., Wang, L., & Archontoulis, S. V. (2020). A CNN-RNN framework for crop yield prediction. Frontiers in Plant Science, 10, 1750
21) Lamidi, E. O. (2019). Household composition and experiences of food insecurity in Nigeria: the role of social capital, education, and time use. Food Security, 11(1), 201-218.
22) Musa, S., & Salisu, A. (2021). Climate change and food security in Kaduna State. Agricultural Research Bulletin, 38(4), 75-89.
23) Nwosu, C., Ojo, B., & Olaniyan, D. (2020). The impact of agricultural policies on household food consumption in Nigeria. Nigerian Agricultural Journal, 52(1), 34-48.
24) Nwozor, A., Olanrewaju, J. S., & Ake, M. B. (2019). National Insecurity and the Challenges of Food Security in Nigeria. Academic Journal of Interdisciplinary Studies, 8(4), 99.
25) Ogundele, F., & Onyekachi, J. (2020). Agricultural extension and food security in Nigeria. Journal of Agricultural Extension Studies, 18(2), 99-114.
26) Ogunlela, O., & Yusuf, M. (2020). Irrigation and food security in Nigeria. Journal of Water Resources and Rural Development, 11(3), 200-215.
27) Ojo, B., Nwosu, C., & Olaniyan, D. (2022). Agricultural credit and food security in Kaduna State, Nigeria. Journal of Rural Economics, 29(1), 41-58.
28) Olaniyan, O., & Babatunde, R. (2022). Socioeconomic factors and food security in Kaduna State. Journal of Food Systems, 29(6), 201-219.
29) Olayemi, K., & Fapojuwo, E. (2021). Market access and food security among farmers in Nigeria. Journal of Agricultural Economics, 22(3), 132-147.
30) Salihu, I., Nuhu, M., & Aliyu, A. (2022). Food security strategies and household dietary diversity. Nutrition and Food Security Journal, 25(5), 134-148.
31) Simango, P. M. (2015). An assessment of women's participation in agricultural production: a case study of Marange Irrigation Scheme in Zimbabwe.
32) Slocum, R., Wichhart, L., Rocheleau, D., & Thomas-Slayter, B. (1995). Power, process and participation: tools for change. London, UK: Intermediate Technology Development Group (ITDG) publishing.
33) Sseruwagi, G. K. (2012). Participatory development: An investigation of in-community stakeholders' perceptions. University of the Incarnate Word.
34) Swanepoel, H., & De Beer, F. (2012). Community development: Breaking the cycle of poverty. Juta and Company Ltd.
35) Taiwo, A. M., & Omifolaji, J. K. (2015). Impact Assessment of National Programme for Food Security (NPFS) On Farmers' Production in Oyo State. PAT December, 11(2), 132-142.
36) Theron, F. (2012). Community development. Breaking the cycle of poverty, H. Swanepoel and F. De Beer (Eds.): book review. Journal of Public Administration, 47(si-1), 420-422.
37) Usman, M., & Salisu, A. (2020). Analyzing food security strategies in Kaduna State. Agricultural Policy Journal, 17(5), 72-90.
38) World Bank. (2018). Poverty and shared prosperity 2018: Piecing together the poverty puzzle.
39) World Health Organization. (2019). The state of food security and nutrition in the world 2019: safeguarding against economic slowdowns and downturns (Vol. 2019). Food & Agriculture Org.
40) Yusuf, O., Musa, S., & Bello, M. (2023). Exploring the impact of policy interventions on food crop farmers in Northern Nigeria. Development Policy Review, 39(2), 301-317.