



Infrastructural Decay and Food Security in Nigeria

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Abstract

This study examines the effect of infrastructure decay on food security in Nigeria. The study looked at road infrastructure decay, security infrastructure decay and agricultural extension infrastructure decay. This study adopts exploratory research design; it tries to examine the effect of infrastructure decay on food security in Nigeria. Infrastructure decay is assessed with road infrastructure decay, security infrastructure decay and agricultural extension services decay as they relate to food security in Nigeria using content analysis of publicly available archive documents. The study relies solely on secondary data. The research is conducted by examining literature concerning infrastructure decay and food security in Nigeria. The literature was obtained through searches in publicly available material. Literature from non-serial publications, official reports, and conferences has been included particularly if they have been cited by other references in term of infrastructure decay and food security. The study revealed that road infrastructure decays, security infrastructure decay and agriculture extension infrastructure decay have negative effects on food security in Nigeria. Based on these findings, the study concludes that provision of good road infrastructure have the potential to bring about increasing food security and productivity and lessening the experience of hunger. The study equally concludes that insecurity is an enemy of food security. The study also concludes that agricultural extension programme improves food security through an increase in farmers' productivity. The study recommends that Federal and State Government should spend more on the roads by focusing on the rural areas. The study recommends that government should eradicate hunger and injustice that form the social bed of insecurity. Lastly, the study recommends the need for more farm extension workers to be deployed to rural areas.

Keywords: Agricultural Extension Infrastructure Decay, Food Security, Infrastructure Decay, Road Infrastructure Decay, and Security Infrastructure Decay.

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I. Introduction

The importance of agriculture to human survival cannot be overemphasized and this is because it provides food for the world over. For any society to develop and thrive in its agricultural sector there must be on ground requisite infrastructures to aid the development of the sector. However, the issue of food security has been on the front burner for long and statements about several countries in Africa that are food insecure. The state of Nigeria's infrastructure poses a great challenge to food security. The decay of infrastructure overtime have made it difficult for the country to ensuring adequate food security; speaking of bad roads, inadequate health system, and poor education infrastructure (Ogunleye *et al.*, 2018)

Availability of adequate infrastructure facilities is an important pre-requisite for sustainable food security. Food security depends on good infrastructural facilities and is an instrument to improve the economy. Adequate infrastructures can reduce the cost of food production which will ensure food security (Oyewole & Oloko, 2006). But most developing countries including Nigeria still suffer from poor rural infrastructural facilities (Olayiwola & Adeleye, 2005). Even though, Nigeria government initiated several projects to improve the quality and quantity of infrastructure in the rural areas through programmes such as the establishment of eleven River Basin Development Authorities (RBDAs), Directorate for Food, Roads and Rural Infrastructure (DFRRI), the Poverty Relief and Infrastructure Investment Fund and the Comprehensive Agricultural Support Programme, the impact of such programmes on the lives of many rural people in the country is still considered to be limited (Ahmed *et al.*, 2010).

Limited accessibility to infrastructures such as road cuts farmers off from sources of inputs, equipment and new technology and keeps yields low. Inadequate infrastructures also affect the level of productivity, thereby inhibiting full utilization of potentials of farmers. Many poor farmers tend to live in isolated villages which are virtually inaccessible during the rainy seasons (Alaba, 2001). The inadequacy and low quality of road infrastructure in many communities have serious implications on food security in Nigeria. Nigeria's rural road network, for instance, is one of the least developed in sub-Saharan Africa. In some parts of the country, most of the roads where major farming operations are carried out are inaccessible; the roads are un-surfaced, narrow, poorly drained and winding thereby making it difficult to move produce from the farm to the marketplace. Even when such roads are in a fair condition, there is a problem of poor maintenance, lack of adequate execution capacity, lack of suitable materials and management problems. All these factors have contributed to food insecurity in Nigeria.

Finally the dearth of agricultural education extension services has created a lacuna that further deepens food insecurity in the State. Farmer's education in rural areas is an essential element to get better agricultural productivity, thereby ensuring food security. The dictum that you cannot give what you do not have has it that uninformed agrarian communities are a reflect of the yield they have and until training and retraining of the agrarian community are taken seriously.

Additionally, ensuring the protection of lives and properties through the provision of adequate security infrastructure is another way of ensuring food security in Nigeria. The security challenge Nigeria is presently facing could diminish the State's ability to command local and international respect (Okon *et al.* 2015). Several studies have noted that poor infrastructure is the main obstacle to food security in Africa (Yeboah, 2015; Olorunfemi, 2018; Okoli & Addo, 2018; Ogebe *et al.*, 2019). Studies such as (Abur *et al.*, 2015; Daudet *et al.*, 2018) have also shown that the presence of roads in rural areas reduces poverty in connected villages by integrating labour and goods markets, thereby providing new economic opportunities to local inhabitants.

Incidentally, the dearth of literature on how bad roads affect agricultural extension services and food security in this clime call for concern, this is because of low patronage of foreign direct investment in the country's agricultural sector. Emerging security agricultural extension technology are hardly deployed towards Nigeria and when done they are not projected enough to create the needed agricultural paradigm shift. The sets of constructs employed to explain food security varies across empirical studies of both developed economies (Bradbury *et al.*, 2017) and developing economies (Babagana *et al.*, 2019; Muhammad & Sidique, 2019; Oyetunde-Usman & Olagunju, 2019) none of these reviewed by this study deployed these unique constructs; road infrastructural decay, security infrastructural decay and agricultural extension infrastructural decay to explain food security challenges in their study.

The study provides answers to the following research questions;

- i. How does road infrastructural decay have effects on food security in Nigeria?
- ii. To what extent does security infrastructural decay aggravated food security in Nigeria?
- iii. What effect does agricultural extension infrastructural decay have on food security in Nigeria?

Conceptual Clarification

Infrastructural Decay

Infrastructure generally refers to basic structures, systems and facilities that enable accomplishment of social and economic goals. Such includes public goods; roads, highway safety and standards, mass transit and sea and airport facilities, railway systems, electricity, water supply systems, telecommunication, waste treatment facilities, drainage and sewage disposal systems, postal services, correctional institutions, education facilities, public health delivery systems, health and safety emergency response systems, housing and security (Hope, 2018). Infrastructural decay would therefore mean a situation whereby the basic amenities stated above are not functional or are in deplorable state.

Food Security

Food security according to Food and Agricultural Organisation (FAO) (2011) exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for active and healthy life. Thus, to achieve food security in Nigeria is a task that requires a holistic approach in terms of commitment, knowledge and skills acquisition by all categories of individuals especially the youths at all levels of education. Food security is usually framed in four dimensions food availability, access to food, food use, utilization and food stability (FAO, 2016a).

Agbo(2002) defines food security as access by all people at all times to sufficient food for a healthy and productive life. Odey(2002) articulates food security system definition as the availability and accessibility of foodstuff in desired quality to all consumers throughout the year. Clover (2003) reported that availability, access, and affordability are all elements of food security that encompass a wide range of interrelated economic, social, and political factors which challenge Africa's ability to address food security. Ultimately, hunger is a political creation which must be ended by political means.

Empirical Review

Road Infrastructural Decay and Food Security

Yeboah (2015) investigated the influence of condition of road transport infrastructure on rural agricultural development in the Jaman South district of Kaduna state. The study purposively sampled 387 farmer households and 84 drivers. The findings of the study revealed that less than 45% of the road network in the district was properly engineered and classified to be good. It was found out that, the average farm distance from the community to the main road or nearest market was approximately 2500m out of which approximately 1,375m was in bad shape. Most of the road networks linking the various communities to the main market were unpaved and immotorable during the rainy season.

Aburet *et al.* (2015) analysed the impact of rural road infrastructure on productivity farmers in North Central Nigeria. Findings of the study showed that access to good roads has significant and influencing effect on farmers' output right from point of accessing farm inputs to point of disposing produce. The study of Bradbury *et al.* (2017) evaluated the effect of road condition and explored transport service on the quality of agricultural produce and access to markets for small scale farmers. The study concluded that there exist potential for low-cost engineering measures to be used in the primary transport segment as part of community driven development projects and government should give the needed supports and interventions.

Ogunleye *et al.* (2018) examined the effects of road transport infrastructure on agricultural sector development in Nigeria from 1985 to 2014. Findings of the study revealed that a positive and statistically significant relationship exists between road transport infrastructures also evidence was found of a unidirectional causality from agricultural sector development to transport infrastructure to boost agricultural sector development, reduce wastage of farm produce and increase the possibility of economic diversification.

Olorunfemi (2018) investigated rural road transportation challenges and food security in Ikere-Ekiti, Ekiti State, Nigeria. The work deployed structured, purposively and randomly administered questionnaires to one hundred and fifty (150) farmers in the selected villages of the study area. Data collected were analyzed using descriptive statistics. Findings from the study revealed that poor state of road transportation system in the area hinders agricultural production which thus heightens food insecurity level. Daud *et al.* (2018) examined the influence of infrastructure; tarred roads, potable water, market, health centre, storage facilities and school on the profitability of food crop production among rural farming households in Oyo State, Nigeria. Result from the findings showed that

47.5% of the respondents affirmed that available tarred roads are functioning as against 23.0% of them whom reported that health facilities were not functioning.

Security Infrastructural Decay and Food Security

Dimelu *et al.* (2016) examined the causes of conflict in agrarian communities of Kogi in Nigeria. Study adopted research survey design with structured questionnaire to extract data for analysis from a sampled of 135 crop famers and 72 herdsman. Findings from study showed that effective management of conflicts was constrained by inadequate funding and lack of institutional support by government to security agencies, enlightening agencies amongst others and all these culminated into low yield of farm produce.

Idakwoji *et al.* (2018) investigated the security and developmental implications of herdsman/farmers conflicts in Kogi State. Findings from the analysis revealed that competing economic use of land resources has a significant effect on the crisis which extensively had a negative productivity effect on food production. The study concluded that there is a need for definite policy enactment on use of land resources as it relates to grazing lands as well as establishment of Alternative Dispute Resolution Mechanisms for resolving disputes between farmers and herdsman as the conflict groups (farmers/herders) have lost confidence in the Nigerian judicial system.

Okoli and Addo (2018) analysed the implication of Fulani herdsman and Benue farmers' crises on food security; food availability and accessibility and accessibility towards maintaining a healthy and active life in Benue state. The study submitted that herdsman/farmers crises have directly and indirectly affected food security in Benue State and that the government should provide public enlightenment campaigns, seminars and symposia to sensitize the farmers and herdsman on the negative effect of the crises as it grossly hamper productivity and extensively endanger food security of the nation as a whole.

Ajiboet *et al.* (2018) examined the dynamics of farmers and herdsman feuds that have led to wanton destruction of lives and properties over the years largely across Africa and Nigeria in particular. The study established that the nation's agro productivity rate gradually dwindles at the incessant clashes of farmers and herdsman clashes as the prevailing sense of insecurity on the farm hinders both party from pastoral and farming activities.

Babagana *et al.* (2019) investigated the impact of Fulani herdsman-farmers' conflicts on food production in Gujba and Tarmuwa Local Government Areas of Yobe State, Nigeria. The study employed descriptive survey design of structured questionnaire and interview on a multistage sampled 397 respondents. Findings of the study revealed that impacts of Fulani herdsman-farmers' conflicts include loss of crops, reduced productivity, loss of lives, increase in prices of agricultural products and increased poverty.

Agriet *et al.* (2019) investigated the effects of insecurity on agricultural efficiency in Balanga LGA of Gombe State, Nigeria. The study employed the ordinary least squares method of multiple regression analysis of time series data. Findings of the study indicated that crime rate and unemployment are negatively related to agricultural productivity. The study of Ogebeet *et al.* (2019) investigated the land use conflict between farmers and herdsman in Gwer West Local Government Area of Benue State, Nigeria. The study deployed simple random and purposive sampling techniques on 80 farmers and 20 with a structured questionnaire and analyzed. The study established that the crises have adverse effect on crop yield and productivity and income of farmer, displacement of farmers, loss of lives and property and loss of products in storage.

Nwozor *et al.* (2019) examined the interconnection between national insecurity and food production as a prelude to the actualization of food security. The study relies on primary and secondary data to evaluate the feasibility of food security in the face of sustained insecurity across the country. The study found that the achievement of food security would be impossible if the insecurity that pervades and envelopes farming communities is not resolved.

Agricultural Extension Infrastructural Decay and Food Security

Iftikhar *et al.* (2015) analysed farmer's literacy rate as a key driver in every aspect of food production and food security in Punjab, either it is land, irrigation, livestock, agricultural credit or agricultural labor; literacy rate is serving as key driver in agricultural production as well as in food security. Analysis of findings revealed that farmer's literacy rate has positive and significant relationship with food security in both separate cases and overall contribution of all possible variables.

Abu and Soom (2016) investigated factors affecting household food security status among rural and urban farming households of Benue State, Nigeria. The study deployed structured questionnaire with purposive and simple random sampling techniques to obtain 180 sampled respondents of which data was analysed. Findings from the study revealed that, constraints such as lack of access to informal education through extension services on latest agricultural developmental activities and technology deserve. The study of Mutisya, Ngware, Kabiru and Kandala (2016) analysed the effects of education on household food security in two informal urban settlements in Kenya from 2007-2012. Findings of the ordered probit revealed that education has a significant effect on food security. The study established the need for additional investment, in the education of the slum households which may catalyses to reduction in the prevalence of food insecurity.

Akinbileet *et al.* (2016) focused on the impacts of irrigation systems education on food security in South Western, Nigeria. The study revealed that poor agricultural extension education especially lack of technical knowhow, inadequate knowledge of crop water requirements and irrigation scheduling strategies were the greatest challenges to sustainable small-scale irrigation in the study areas. The study of Metuet *et al.* (2016) investigated food security situation in Nigeria from 1991 to 2015. The study adopted constructs like extension services and inconsistent government policies were used in evaluation. The study showed that there is a shortfall in domestically produced food in Nigeria because the growth in the population of Nigeria is at the rate of 3.2% while the growth in food production has been less than one.

Udofia and Ekong (2017) analysed the indispensable role of chemistry education in agricultural production and food security in the context of economic realities in Nigeria. The burden of the study lies in the identification and support processes and linkages that promote technological and attitudinal change towards agricultural production especially if extension farm workers are co-opted into the relevance of chemistry education which can assist greatly on the field as well as the implications of using chemistry education to attain food security in Nigeria.

Bizikova *et al.*(2017) investigated in a cross country on Asia and Africa, the effect of effective public investments in education and extension education services to improve food security. Findings of the study established that public investment in agriculture has a positive impact on food security as 70% of the 87 agricultural interventions have a positive impact on food security while 7% have a negative impact particularly with robust evidence value chain development and extension education services.

Muhammad and Sidique (2019) explored the factors affecting food security status among urban and rural households in Nigeria. Findings established that household head education, food and non-food expenditures and the number of adults have a significant positive influence on food security and that the government needs to intensify efforts for programs that will promote the education of household heads' by improving the access of poor households to formal education and, increasing social capital policies as these efforts will create opportunities for improving food security in the country.

Oyetunde-Usman and Olagunju (2019) examined the determinants of food security and technical efficiency among agricultural households in Nigeria. Findings of the study showed that agricultural households have the tendency of improving their technical efficiency by 48% using the available resource more efficiently if the knowledge via agriculture extension education and information which can be improved upon.

Theoretical Framework

Theory of Developmental State

The theory of developmental state also known as hard state was conceptualised by Chalmers Johnson. It refers to the observable fact of state-led macroeconomic planning in East Asia in the late 20th century. In this model of capitalism (sometimes referred to as state development capitalism), the state has more political power, independence, as well as more control over her economy. A developmental state is known for having strong state involvement towards provisions of infrastructural development also known as capital formation, as well as extensive planning and regulation. The term has subsequently been used to describe countries outside East Asia that satisfy the criteria of a developmental state (Johnson, 1982).

A developmental state can also be seen as a state that is pays attention on economic development and evolves necessary policy measures to accomplish that objective. Chalmers argued that Japan's economic development had much to do with far-sighted intervention by bureaucrats, whereby states that were late to industrialize, the state itself led the industrialization drive, that is, the state took on developmental functions. In addition, the economic bureaucracies are highly cerebral and qualified. As the case stands, it is a tradition that working in government has strong appeal to most people in China as against developing nations. Governmental recruitment is intensively competitive.

The nexus here is the need for the Nigeria government to be actively involved in and committed to the provisions of basic infrastructures that could assure the State into the safety net of food secured State by providing the needed basic infrastructures which threatens the food security status of the State as such interventions will promote the growth of new order or industries and reduce the dislocations caused by shifts in agro investment. In other words, developmental states can pursue industrial policies where basic infrastructures are available and functional.

Diffusion Theory of Rural Development

The theory was propounded by a United States rural sociologist, Everett Rogers in 1962. The diffusion theory of rural development is an attempt to explain the existence of substantial productivity difference among farmers in the same economic and geographical regions (Rogers, 2003).

According to the diffusion theory, to correct the structural impediments to improve agricultural productivity, the farmers need to embrace modern techniques of farming to guarantee food security. The diffusion of innovations to farmers required reorientation and rehabilitation, which is possible through communication and other support services. The needs and advantages of the modern techniques have to be explained to farmers in Nigeria for them to understand and apply the same and thus, reduce incidences of poverty and food insecurity.

This theory as applied by many developing nations had led to the popularization of agricultural extension services, demonstration farms or experimental farms also known as local innovation. Through these media, the rural farmers who are yet unaware of the modern innovations are brought face to face with the concepts, their application as well as their gains. The diffusion theory has also gained considerable acceptance in Nigeria where it is emphasized as a solution to the problem of low productivity of the average rural farmers can lead to national food insecurity.

The relevance of the theory to this study lies in the fact that it has made us to understand that farmers' especially rural farmers in Nigeria also have differences in productivity even when they are given the same incentives including: loans, fertilizers, rice and maize as a result of their different abilities to adapt to modern farming techniques and innovations. Most of them are too conservative and therefore, resist change no matter the gains. This may not be unconnected to why Nigeria is battling with food insecurity. This theory thus enable us device a more practical approach to teaching the local farmers in the language they would understand thereby guaranteeing food security.

II. METHODOLOGY

This study adopts exploratory research design; it tries to examine the effect of infrastructure decay on food security in Nigeria. Infrastructure decay is assessed with road infrastructure decay, security infrastructure decay and agricultural extension services decay as they relate to food security in Nigeria using content analysis of publicly available archive documents. The study relies solely on secondary data. The research is conducted by examining literature concerning the infrastructure decay and food security in Nigeria. The literature was obtained through searches in publicly available material. Literature from non-serial publications, official reports, and conferences has been included particularly if they have been cited by other references in term of infrastructure decay and food security.

III. DISCUSSION OF FINDINGS

The review of literature reveals that road infrastructural decay has a negative effect on food security. The rationale for this finding could be that having access to transportation would decrease the risk of exposure to food insecurity particularly for poor household farmers. The finding is in tandem with the findings in the previous works of Yeboah (2015); Abur, Ademoyewa and Damkor (2015); Olorunfemi (2018) who found that transport infrastructural deficit reduces food availability and productivity.

The result gotten from empirical literature is that security infrastructural decay negatively aggravates food security. This is because insecurity has caused serious disruptions in Nigeria's agricultural production. Many farmers have been uprooted and displaced from their ancestral farming communities, others are perpetually afraid for their lives and as such cannot optimally engage in farming activities. This finding is consistent with the findings in the previous work of Okoli and Addo (2018); Ajibo *et al.* (2018); Babagana *et al.* (2019); Ogebe *et al.* (2019); Nwozor *et al.* (2019).

The result from prior empirical studies is that agricultural extension infrastructural decay has a negative effect on food security in Kogi State, Nigeria. This indicates that agricultural extension is a major component to facilitate development since it plays a starring role in agricultural and rural development efforts. This finding is inconsistent with the findings in the previous work of Abu and Soom (2016); Muhammed and Sidique (2019).

IV. CONCLUSIONS AND RECOMMENDATIONS

The study concludes that road infrastructure and the provision of good road network, safe, reliable, and affordable transport services in rural areas, have the potential to bring about increasing food security and productivity and lessening the experience of hunger. Improved all-season transport infrastructure and the availability of good roads are effective ways to increase food security and curb hunger, as it allows farmers to sell their produce to a larger market at competitive prices.

The study equally concludes that insecurity is an enemy of food security. There is a well-established correlation between the exposure of countries to external or internal conflicts, and the deterioration in their food security. The study also concludes that agricultural extension programmes improve food security through an increase in farmers' productivity. However, in agricultural-dependent State like Kogi State in Nigeria, extension programmes have been the main conduit for disseminating information on farm technologies, support rural adult learning and assist farmers in developing their farm technical and managerial skills.

Based on the conclusions of this study, the following recommendations are made;

The study recommends that Federal and State Government should spend more on the roads by focusing on the rural areas. They should provide rural feeder roads. These rural roads, if made motorable, reliable and accessible, has a positive impact on improving food security and ensuring zero hunger.

The study recommends that government should eradicate hunger and injustice that form the social bed of insecurity. Government should cooperate with civil society, international agencies and donor agencies to promote and support the development of well-governed societies, where all segments of society, women and men equally, share rights and obligations equitably. In the light of the results of this study, the study recommends the need for more farm extension workers to be deployed to rural areas. The services of extension workers should be provided for farmers in Kogi State and across the country.

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