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HARNESSING TECHNOLOGY AND GOVERNANCE FOR SUSTAINABLE FOOD SECURITY IN NIGERIA

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Abstract

Nigeria continues to grapple with severe food security challenges, driven by inefficient agricultural practices and weak institutional frameworks. The persistence of poorly designed policies, inadequate budgetary allocations, resource mismanagement, and governance deficits has significantly undermined the sector's capacity to meet national food demand. Despite numerous agricultural programmes introduced since the collapse of the First Republic, these initiatives have largely failed to deliver sustainable food security. In recent years, the situation has been further aggravated by widespread insecurity, including armed conflicts and agitations, as well as economic instability and political uncertainties, all of which have constrained farmers' productivity. This paper interrogates the role of technology and governance in achieving sustainable food security in Nigeria. It highlights the critical link between technological innovation, such as mechanisation, improved seed systems, and digital agricultural solutions, and the implementation of coherent, responsive government policies. Adopting a historical research approach, the study relies on qualitative analysis of both primary and secondary sources, including official documents, archival records, and scholarly literature. The findings underscore the necessity of an integrated strategy that combines technological advancement, effective governance, and community participation. The study argues that sustainable food security in Nigeria is attainable through the adoption of modern agricultural technologies, increased and transparent funding, and strengthened mechanisms for policy implementation and monitoring. Ultimately, a coordinated and accountable framework is essential for enhancing productivity and ensuring long-term resilience in Nigeria's agricultural sector.

***Keywords**: Technological Innovations, Effective Governance, Food Security, Nigeria*

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Introduction

Nigeria faces a daunting food security challenge that has worsened in recent years. Since independence, the issue of food security has prompted successive governments, both at national and sub-national levels in Nigeria, to initiate agricultural development programmes aimed at increasing food production and ensuring the availability and affordability of food commodities in the country.

Apart from the creation of ministries of agriculture at national and state levels, each administration has initiated development plans and programmes aimed at achieving food security. However, these policies and programmes have not yielded the desired results. [1]. Nigeria is one of the largest countries in Africa, with a total geographical area of 923,768 square kilometres and an estimated population of about 223 million. [2] It lies wholly within the tropics along the Gulf of Guinea on the western coast of Africa. Nigeria has a highly diversified agro-ecological landscape, which enables the production of a wide range of agricultural products. Over the past three decades, agricultural yields have remained the same or, worse still, declined. Nigeria's agriculture, to a large extent, still possesses the characteristics of a peasant economy that was prominent in the pre-independence period.[3]

[1] Ojeka G. O. et al, Constraints to agricultural development in Nigeria, ECRTD, UK:2016, pp.5-6.
[2] National Bureau of Statistics, 2023 Review.
[3] M.O. Adewumi and O. A. Omotosho, An Analysis of production objectives of small-scale rural farming households in Kwara State, Nigeria, p.205.

More than 70 per cent of Nigeria's farming population consists of smallholder farmers, each of whom owns or cultivates less than 5 hectares of farmland.[4] Less than 50% of the country's cultivable agricultural land is under cultivation. Even then, small-holding and traditional farmers who use rudimentary production techniques, with resultant low yields, cultivate most of this land. Smallholder farmers face many constraints, including limited access to modern inputs and credit, poor infrastructure, inadequate market access, and insufficient research and extension services[5].

Although there has been a recent rise in agricultural productivity, this improvement is driven more by expanded planting areas for staple crops than by yield increases. However, agriculture's contribution to the non-oil gross domestic product (GDP) was stable at about 40 per cent in recent years. [6] Consequently, there has been a dramatic increase in the incidence and severity of poverty in Nigeria, in part due to the agricultural sector's dwindling performance, which employs the preponderant majority of the population. Furthermore, poverty in Nigeria is assuming wider dimensions, including household, income poverty, food poverty and insecurity, forcing many peasant farmers to abandon agriculture and migrate to urban centres in search of better living standards.[7]. Despite numerous government efforts to reposition agriculture to provide food for human consumption and raw materials for industrial needs, as well as to generate foreign exchange earnings and employment for the population, the rate of capacity utilisation in the country's

[4] National Agricultural Research Project, Ibadan, Nigeria: NARP Press, 2021.
[5] Ojeka G. O. et al., p. 2.
[6] FDA/FMARI Report, 2022.
[7] Ojeka G.O. et al., p. 3.

agro-allied industry has been declining. The linkage between the agricultural sector and industry has been very weak. [8]

From the perspective of sustainable agricultural growth and development in Nigeria, one of the fundamental constraints is the peasant nature of the production system, characterised by low productivity, poor responsiveness to technology adoption strategies, and poor returns on investment. It is recognised that agricultural commercialisation and investment are the key strategies for promoting accelerated modernisation, sustainable growth and development and hence, poverty reduction in the agricultural sector. However, to attract investment into agriculture, the constraints inhibiting the sector's performance must first be identified, with a view to unlocking them and creating a conducive investment climate. [9]

Technology is imperative in the commercialisation of agriculture due to its capacity to increase yields, ensure year-round cultivation, provide improved inputs, improve storage, enhance processing and packaging, and ensure the availability of products at all times, thereby improving returns for farmers and investors. Ensuring sustainable food security involves not only increased productivity resulting from technologically enhanced inputs such as improved seeds, fertilisers, agro-chemicals, irrigation systems, farm machinery, soil assessment and evaluation, among others, but also marketing. Marketing involves getting agricultural products from farmers to consumers. It helps to enlarge production by stimulating consumption, expanding the agro-industry and facilitating

[8] Oni T. O., Challenges and prospects of agriculture in Nigeria: The way forward, JESD Vol. 4, No.16, 2013. p. 2.
[9] Oni, T. O, p. 2.

industrial growth. It involves the following basic elements: transportation, access roads, safe and efficient storage, processing and packaging and then supply to the markets. A robust information system that links buyers and sellers is also necessary. [10].

Improved agricultural production, processing and trade through increased access to resources such as land, technology (improved seeds & seedlings, fertilisers, and agro-chemicals for pest and disease control and tractors), credit and training and rural infrastructural developments such as road network, electricity, schools and health facilities cannot be achieved without government design and involvement[11].

The success or otherwise of an organisational objective is determined by those elected to govern. The government's primary responsibility is to ensure the security of the citizenry's life and property, with food security as a paramount concern. According to the provisions of the 1999 constitution as amended, section 14, subsection (2), article (a), (b) and (c), states thus;

(a) Sovereignty belongs to the people of Nigeria, from whom the government, through this constitution, derives all its powers and authority.

(b) The security and welfare of the people shall be the primary purpose of government and

(c) The participation by the people in their government shall be ensured in accordance with the provisions of this constitution.

[10] Ifeanyichukwu Ehioje, personal communication, 19/9/2024.
[11] Ifeanyichukwu Ehioje, personal communication, 19/9/2024.

The government, therefore, has a pivotal role to play in achieving sustainable food security in Nigeria. It is against this backdrop that this paper examines the dynamics between technological innovations, such as modern agricultural best practices, and effective government policies and programmes in achieving sustainable food security in Nigeria.

The paper aims at the necessity of adopting modern technological innovations into the agricultural sector as essential requirement for increased food output and the need for government to exhibit goodwill through prioritized investment into crop production and effective implementation of programmes and policies to eliminate the identified constraints that hinder agricultural development in the country such as access to land, farm inputs, credits and training of workforce among others.

Conceptual Clarification

Some terminologies used in this paper will need clarification as follows:

- Technological Innovation

Historically, the story of humanity has been that of constant improvement in its interactions with the environment. Early humans were nomadic fruit gatherers before the development of stone tools. The Stone Age improved on the experience of the fruit gatherer by establishing settlements, planting, and reproducing some of the fruits that their predecessors had gathered only in the wild. The Iron Age replaced the Stone Age. With iron tools, humans become better equipped to cultivate their environment to sustain themselves. Today, machines have been designed to do virtually everything one can think of in agricultural production, from clearing to harvest. Furthermore, the quality of seeds

and seedlings, pest and disease control, storage, processing, and marketing have been technologically enhanced to ensure agricultural sustainability. By adopting technology into farming, otherwise known as mechanised agriculture, agriculture can become more efficient, productive and sustainable, ensuring food security and economic growth for communities and the nation at large. Technology, according to Arnulf Grubler, in the narrowest sense, consists of manufactured objects such as tools (axes, arrowheads, and their modern equivalents) and containers (pots, water reservoirs, buildings). Their purpose is either to enhance human capabilities or to enable humans to perform tasks they could not perform otherwise.[12]

- Food Security

Food security is the state of having reliable access to sufficient, affordable, nutritious food. The availability of food for people of any class, state, gender, or religion is another element of food security. Similarly, household food security is considered to exist when all members of a family have access to enough food at all times for an active, healthy life. Food-secure individuals do not live in hunger or fear of starvation. Food security includes resilience to future disruptions of food supply. Such a disruption could occur due to various risk factors such as droughts and floods, fuel shortages, economic instability, political instability or wars. Food insecurity is the opposite of food security, where there is only limited or uncertain availability of suitable food. [13].

[12] Arnulf Grubler, what is technology? Annals of Science, Vol. 77, No. 3, 2020, p. 20.
[13] Food and Agriculture Organisation (FAO) Report, 2023.

The concept of food security has evolved. The four pillars of food security include availability, access, utilisation, and stability. In addition, there are two more important dimensions: agency and sustainability. These six dimensions of food security are reinforced in conceptual and legal understandings of the right to food. The World Food Summit in 1996 declared that "food should not be used as an instrument for political and economic pressure"[14]. The effects of food insecurity can include hunger and even famine. Chronic food insecurity translates into a high degree of vulnerability to hunger and famine. Chronic hunger and malnutrition in childhood can lead to stunted growth. Once stunting has occurred, improved nutritional intake after about two years is unable to reverse the damage. Severe childhood malnutrition often leads to cognitive development defects[15].

More recently, the ethical and human rights dimension of food security has come into focus. The right to food is not a new concept; it was first recognised in the UN Declaration of Human Rights in 1948. In 1996, the formal adoption of the right to Adequate Food marked a milestone achievement by delegates to the World Food Summit. It pointed the way towards a rights-based approach to food security. Currently, over 40 countries have the right to food enshrined in their constitutions, and FAO estimates that the right to food is judicially enforceable in some 54 countries. [16] In 2004, a set of voluntary guidelines supporting the progressive realisation of the right to adequate food in the context of

[14] Food and Agriculture Organisation (FAO) Report, 2023. p.2.
[15] FAO, 2023. p.2
[16] Nhlapo McClain, implementing a human rights approach to food security, 2020. Africa Conference, IFRI, Policy Brief 13, 2004. p.2.

national food security was elaborated by an intergovernmental working group under the auspices of the FAO Council. [17]

- Governance

At the end of the twentieth century and the beginning of the twenty-first century, the concept of governance has taken on a central role in contemporary debates in the social sciences, particularly in public administration. The concept has been used frequently, but often with quite different meanings and implications. It is considered a major reason for the increasing popularity of the concept that, unlike the narrower term "government", it can encompass the full range of institutions and relationships involved in governing.[18] There are a variety of meanings and approaches to governance. Still, its main focus is on the capacity of government to make and implement policy, or, in short, to steer society. Thus, thinking about governance is thinking about how to steer the economy and society, and how to reach collective goals.[19]

According to J. Pierre and B. Guy Peter, the role that government plays in governance is variable rather than constant, because there are state-centric models of governance and others that are more society-centred.[20] Katsamunska states that "Governance is the institutional capacity of public organisations to provide public and other goods demanded by a country's citizens or the representatives thereof in an effective, transparent, impartial and accountable manner, subject to resource constraints. In his view,

[17] FAO, 2006, p.3.
[18] Polya Katsamunska, The concept of governance and public governance theories, Articles, 2016, p.2.
[19] Polya Katsamunska, p.1.
[20]Jon Pierre and B. G Peters, Governance, Politics and the State, Macmillan Press Ltd: 2000. p.29.

this is a broad, largely abstract definition, but it provides common ground for all the different approaches to governance.[21] Pierre and Peters argue that the concept of governance is "notoriously slippery" and is often used by scientists and practitioners without a shared, common definition. As a confusing term, governance has become an umbrella concept for a wide variety of phenomena, such as policy networks, public management, sectoral coordination, public-private partnerships, corporate governance, and 'good governance' as a reform objective promoted by the World Bank and the International Monetary Fund. The possible confusion of the interpretation of the term has prompted researchers to consider governance in terms of both structure and process.

In structural terms, governance is viewed as the set of political and economic institutions created over time and designed to address governance problems. Thus, governance conducted by and through vertically integrated state structures presents an idealised model of democratic government and public bureaucracy.[22]

According to Wesley Carrington et al, governance refers to group decision-making that addresses shared problems. It describes the processes and institutions that guide and restrain the collective activities taken by a state and its citizens. In addition, governance is more about the process by which a decision is made than about the substance of the decision itself.[23]. In the above context, the elected representatives of the people in governance determine the success or otherwise of the state's collective objective. Society-centred governance is imperative in a democratic setting. Constitutionally, Nigeria practices

[21] Polya Katsamunska, 2016, p.2.
[22]Jon Pierre and B. G. Peters, 2000, p.18.
[23] Wesley Carrington et al, The theory of governance and accountability, University of Iowa, 2008. p.2.

democracy, and one of the cardinal objectives of the government, as enshrined in the constitution, is the security of the people. Food security for the citizenry is therefore the government's primary responsibility.

Democratic theory greatly influences the debate on governance issues concerning states. Though there are numerous views on what makes a structure or institution democratic, the divergent views agree that, compared to other forms of government, democracy best ensures good governance because of its focus on the people, direct electoral process, and the principles of equality, accountability, accessibility, and checks and balances[24]. People's or society-centred governance is synonymous with democracy in many ways. The government should be accountable to the governed, and the collective needs or interests of the people should form its goals. Policies and programmes of the government should reflect the needs and aspirations of the people, and the people should own such programmes/policies through participation.

Theoretical Framework

The sustainable livelihoods approach (SLA) was adopted as a framework for analysis in this paper to explain the relationship among governance, technology, and food security outcomes. Robert Chambers developed the theory in the mid-1980s to enhance the efficiency of development cooperation. His concepts form the basis of the sustainable livelihoods approach (SLA), as developed by the British Department for International

[24] Wesley Carrington et al, The Theory of Governance and Accountability, University of Iowa, 2008, p.10.

Development (DFID). Since 1997, DFID has integrated the approach into its development cooperation programme. [25]

As DFID's aim is the elimination of poverty in poorer countries, the adoption of the livelihoods approach is expected to contribute to this aim in providing structure to debate and discourse. In this way, the approach has to be understood essentially as a tool or checklist for understanding poverty, by responding to poor people's views and their own understanding of poverty. Its application is flexible and adaptable to specific local settings and to objectives defined in a participatory manner. This theory is relevant to this study because it demonstrates how governance can stimulate sustainable development by effectively harnessing the potential of the citizenry.

Potentials of Technology in Agricultural Productivity

From drones that map fields and monitor crop growth to data-driven smart irrigation systems, technology gives farmers tools to optimise crop yields and increase efficiency. But the impact of technology in agriculture goes beyond improving crop production only. [26]Agriculture in Nigeria is largely dependent on nature, but climate change and global warming are making farming increasingly unpredictable. The need of the hour is to educate farmers in the use of modern technology and innovative approaches to increase

[25]M. Kollmair and S. Gamper (eds), The sustainable livelihoods approach, Development Study Group (DSGZ), University of Zurich: 2002, p.10.
[26] S. M. Sehgal Foundation Publication, 16th March, 2023.

productivity and raise profitability. Agricultural development practices over time have been perceived as exploiting natural resources faster than they can be replenished. Exponential growth in the human population has increased demand for food and shelter, putting pressure on the "natural" carrying capacity of the land to support it. Natural imbalance is evident in pollution, soil degradation, declines in wildlife populations, and human-induced alterations to flora and fauna. It is reasonable to assume that human population growth will continue and place greater demands on the agricultural ecosystem. Thus, technology has and will continue to play a major role in agriculture and sustainable development going forward.[27]

Technology has a major role in farming and agricultural practices, and with the advent of digital technology, the scope has widened. Innovation in agriculture is leading an evolution in agricultural practices, thereby reducing losses and increasing efficiency. This is positively impacting farmers. The use of digital and analytic tools is driving continuous improvement in agriculture, and the trend is here to stay, resulting in improved crop yields and helping to increase the income of the farming community. Technology in agriculture affects many areas, such as fertilisers, pesticides, and seed technology. Biotechnology and genetic engineering have resulted in pest resistance and increased crop yields.[28]

In India, for instance, during the green revolution in 1960, India managed to achieve self-sufficiency in food grain production by leveraging modern methods of agriculture like

[27] S. M. Sehgal Foundation Publication, 16th March, 2023, p.2.
[28] I. Ehioje, personal interview, 19/9/2024.

chemical fertilisers, pesticides, higher quality seeds and proper irrigation. Technological advances eventually appeared across all aspects of agricultural development in India. The introduction of tractors was followed by new tillage and harvesting equipment, irrigation methods, and air-seeding technology, all of which led to improved quality of food and fibre. [29] Nigerian farmers can leverage scientific data and technology to enhance crop yields and stay abreast of cutting-edge farming methods.

Uses of Modern Technology in Agriculture

- Improved productivity from the mechanisation of agriculture: Manual labour and hand tools used in agriculture have limitations in terms of energy and output, especially in tropical environments. Resistance to agricultural mechanisation, especially among smallholder farmers due to accessibility, cost, and maintenance issues, often acts as a detrimental factor. Reducing manual labour and speeding up processes is imperative; therefore, the need is to partner with others and the government to leverage modern machinery. Agricultural mechanisation can directly and indirectly affect yields through reductions in post-harvest losses and increases in harvest gains[30].
- Climate/Weather Prediction through Artificial Intelligence: A major advance in agriculture is the use of artificial intelligence (AI). Modern equipment and tools based on Ai enable data gathering and assist in precision farming and informed decision-making. Drones, remote sensors, and satellites gather 24-hour data on weather patterns in and around the fields, providing farmers with vital information on temperature, rainfall, soil, humidity,

[29] Sehgal Foundation, 2023, p.3.
[30] Ifeanyichukwu Ehioje, 19/9/2023.

and other factors[31]. However, in a country like Nigeria, where a low-technology base, fragmented landholdings, poverty, and other factors act as impediments, AI technology is difficult to adopt at the moment. But there is no doubt that technologies based on AI can bring precision to large-scale farming and lead to an exponential rise in productivity. In other words, Nigeria should prioritise investment in technology infrastructure to create an enabling environment for the adoption of AI technology in farming.

-Resilient Crops Developed via the use of Biotechnology: Biotechnology refers to a wide range of methodologies that include traditional breeding methods, genetic engineering and the development of microorganisms for agriculture. Generally speaking, genetic engineering uses an understanding of DNA to identify and work with genes to increase crop resistance to pests, develop high-yielding varieties, and improve livestock.

Agricultural sensors: Communication technology has advanced rapidly, making smart farming a possibility. Sensors are now being used in agriculture to provide farmers with data to monitor and optimise crops in response to environmental conditions and challenges.

- Improving farm yield and supply chain management via big data: The collection and compilation of data and its further processing to make it useful for decision-making/problem-solving are expanding the way big data functions. Big Data is slated to play a major role in smart farming, and the benefits percolate across the entire supply chain and the markets. Agriculture is becoming larger, and it depends on many variables.

[31]M. Kollmair and S. Gamper (eds), University of Zurich, 2002, p.8.

- Livestock monitoring: The use of chips and body sensors can help prevent disease outbreaks and is crucial in large-scale livestock management. Chips and body sensors measure vital parameters and indicators that could detect illness early and prevent herd infection. Similarly, ultrasounds are a useful tool for assessing meat quality. This helps control and improve the quality of the meat [32].
- Monitor and control crop irrigation systems through smartphones: Mobile technology has also been playing a significant role in monitoring and controlling crop irrigation systems. With modern technology, farmers can control their irrigation systems via smartphones and computers rather than driving to each field.

The Relevance of Agricultural Technology Transfer to Food Security in Nigeria

The importance of agricultural technology transfer in Nigeria's drive for food security cannot be overstated. Nigerian farmers face many constraints and opportunities. In addition to being profitable, they need to meet environmental standards and regulations. According to Umar, technology transfer remains an important factor in agriculture because of the following:

(1) The need for technologies that target pests and diseases more precisely
(2) The need for technologies that administer nutrients more efficiently
(3) The need for technologies that administer water more efficiently
(4) The need for technologies that reduce post-harvest wastages
(5) The need for technologies that disseminate information effectively

[32] Sehgal Foundation, 2023, p.2.

(6) The need for farmers to practice mechanised agriculture to produce more food for the growing population

(7) The need for climate-smart agriculture.

There are key players in Nigeria's agricultural technology development and transfer. According to Adzenga Jacobs, the key players may be grouped into three broad categories;

These three classes of players cut across the public and private sectors of the economy [33].

They are agricultural technology developers, agricultural technology disseminators and agricultural technology users. Agricultural technology developers, such as international research centres like the International Institute of Tropical Agriculture (IITA), are responsible for the research and development of new and improved agricultural technologies, including farm machinery, certified seeds, livestock, and food-processing equipment. Agricultural technology disseminators, on the other hand, are involved in testing, multiplying and distributing already approved new technologies for farmers. The state Agricultural Development Programmes (ADPs) in the thirty-six states of the federation, ministries of agriculture in both state and federal governments, and some specialised agencies are examples of organisations that disseminate agricultural technology. Lastly, farmers are the key users of agricultural technologies for their sustenance and national development.

According to Farm Square, farmers face challenges in accessing improved agricultural technologies to increase productivity. These include: access to technology,

[33] I. Adzenga, and S. L. Dalap, *Agricultural Technology Transfer in Nigeria, AESN*, 2023, p. 3.

capacity building, and sustainability. These challenges have many peculiarities that warrant further discussion. This paper will not delve into them now. [34] From the above discussion, there is a clear indication that the effectiveness of the technology development and transfer strategy in Nigeria depends primarily on the key roles of technology developers, technology disseminators, and technology users along the value chains. A more pragmatic and result-oriented strategy is needed that would enhance close collaborations among the three players, especially between the developers and disseminators and the end users (Farmers).

The Role of Governance in Attaining State Goals

Achieving sustainable food security, which has been adopted as one of the Millennium Development Goals (MDGs) globally, has been a top priority of the Nigerian state since its independence. Each successive government has demonstrated a commitment, at least in principle, to the pursuit of this goal. Numerous programmes and national development plans have been initiated, and more continue to emerge as each administration struggles to align itself with this national priority. From the first national development plan in 1962 (First Republic), second development plan in 1979, Green Revolution Programmes, Operation Feed the Nation, and River Basin Development Authority Project, among others, to Fadama projects in recent years, it is evident that the government provide leadership, sets priorities and initiate policies and plans that drive the achievement or otherwise of national goals.

[34] Farm Square Agricultural Technology, The future of farming in Nigeria, 2022, p.4.

According to Abhishek Kaushik, governance is a decisive factor in every nation's progress. Good governance is necessary to build a wealthy nation in which citizens' well-being takes precedence. The legitimacy of a government can be called into question based on the criteria established by each evolving era of human civilisation to define good governance. [35]. The principles of good governance are advocated as a requirement for any nation, including Nigeria, to achieve sustainable food security and other Sustainable Development Goals (SDGs).

Although there is no consensus among scholars on the definition of good governance, Kaushik defined it as the public, accountable, responsible, fair, and citizen-centred administration of a country's resources and affairs. Governance is realised when all citizens share the state's ultimate objective of advancing public benefit.[36]. According to the United Nations Development Programme, good governance is inclusive, transparent and accountable to its population. It is effective and equitable, and it promotes the rule of law. It ensures that the opinions of the poor and vulnerable are considered in decisions regarding development resources, and that political, social and economic goals are based on a broad consensus among the three stakeholders, the state, the private sector and civil society.[37]

Omri et al. studied the interaction between good governance and sustainable development; the findings indicate that political and institutional governance contribute positively to

[35] Abhishek Kaushik, "The role of governance in achieving sustainable development: A Study of India", *IJPSG*, 2023, 5(1), p.101.
[36] Abhishek Kaushik, p.2.
[37] UNDP Report, 2023.

achieving sustainable development.[38] It has been advocated that a comprehensive framework for achieving good governance be included in future Nigerian national development agendas, based on research findings and lessons learned from other nations' experiences, development progress, and challenges related to food security and other desired Sustainable Development Goals (SDGs).

Conclusion

Rapid population growth, global warming, and climate change have placed significant pressure on the agricultural sector to increase productivity and efficiency. The challenge is to find a way and means to produce enough food to feed the population, particularly in Nigeria. The challenge of utilising minimum acreage for agriculture and reducing food wastage in production and distribution is a critical issue for national food security. Increasing the role of technology in Nigerian agricultural systems to address these issues and enhance productivity and efficiency is the only way to a food-secure future.

Nigeria has a long way to go in adopting modern farming practices, and the pace at which the government is addressing the issue is slow. A path-breaking effort is needed to educate real farmers about the benefits of technology. Transcending the barriers of archaic farming practices and a medieval mindset is a challenge that needs to be overcome for a better, more food-secure future. Government at all levels in Nigeria must devise ways and means to enable farmers to access modern, desirable, and productive agricultural

[38] A. Omri et al, good governance for sustainable development goals: getting ahead of the pack or falling behind? 2020, p.83.

technologies that are affordable and usable in their peculiar agro-ecological situations and capacities.

Technology in agriculture has the potential to truly lead Nigeria toward economic sufficiency in all respects and to reduce its dependence on external factors. This paper, therefore, concludes that for Nigeria to achieve self-sufficiency in food production, distribution and consumption, there is a need to create an enabling environment at all levels: federal, state and local governments, as well as development partners, for increased private-sector participation in effective multiplication and dissemination of acceptable production technologies that are affordable to farmers. Apart from a budget increase, there should be effective utilisation of every resource allocated to agricultural development. Government at all levels should tackle corruption, which has become a stumbling block to all forms of development in the country. Extension services and farmer training should be enhanced to enable the successful transfer and adoption of innovative technologies by Nigerian farmers, alongside input subsidies.

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