

THE INFORMATIVE ROLES OF MASS MEDIA IN PROMOTING FOOD SECURITY AND ZERO HUNGER NIGERIA.

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Abstract

This study aim to examine the informative roles of mass media in promoting food security and zero hunger in Nigeria. The study explore the basic role of mass media in promoting food security, which includes; Raising Public Awareness on Food Security Issues, Advocacy for Agricultural Innovation and Sustainable Practices and Promoting Food Education and Healthy Diets in other to sway public awareness, government guidelines, and food-related behaviors. Its further investigate the effect of promoting food security and zero hunger in Nigeria, including; Reduction in Malnutrition and Improved Public Health, Poverty Reduction and Economic Growth and Social Stability and Conflict Mitigation. With the effect, the study also dig into the Challenges of zero hunger in Nigeria such as; Food Distribution Inefficiencies, High Population Growth, Gender Inequality in Agriculture and Climate Change and Environmental Factors. Following the challenges, the study gave ways of promoting food security and zero hunger in Nigeria which consist of Investment in Sustainable Agriculture, Improvement of Rural Infrastructure, Empowering Smallholder Farmers and Social Protection Programs. The study concluded that leveraging the power of mass media can significantly contribute to a more sustainable and equitable food system in Nigeria, enhancing resilience against hunger. One of the recommendation provided was that mass media should develop more dedicated programs that focus on sustainable farming practices, innovative technologies, and success stories from local farmers to inspire and educate audiences.

Keyword: Informative, Mass Media, Roles, Promoting, Food Security, Zero Hunger and Nigeria

Introduction

The role of mass media in addressing critical social issues has become increasingly vital, especially in the context of food security and hunger. In Nigeria, where over 25 million people are estimated to be food insecure (World Food Programme, 2023), the media serves as a powerful tool for disseminating information, raising awareness, and advocating for

policy changes that can promote food security and contribute to the global goal of Zero Hunger. Mass media encompasses various platforms, including television, radio, print, and digital media, each of which can reach diverse audiences and facilitate dialogue on agricultural practices, nutrition, and food distribution.

One of the primary informative roles of mass media is to educate the public about sustainable agricultural practices and innovative technologies that can enhance food production. By providing farmers with knowledge on crop management, pest control, and climate-smart techniques, media outlets can help improve yields and reduce losses. For instance, programs that highlight success stories of local farmers using sustainable methods can inspire others to adopt similar practices, ultimately contributing to increased food availability (Ogunjimi, 2021).

Additionally, mass media plays a crucial role in promoting nutritional awareness and healthy eating habits. By broadcasting nutritional information and recipes that emphasize local foods, media can combat malnutrition and promote the consumption of a diverse diet. Campaigns that highlight the importance of micronutrients and balanced diets can significantly influence public perception and behavior regarding food choices (Nigerian Institute of Food Science and Technology, 2022).

Furthermore, mass media acts as a watchdog by holding government and private sector stakeholders accountable for food policies and practices. Investigative journalism can uncover issues related to food wastage, corruption in food distribution, and inequities in access to resources. Such reporting is essential for driving policy reforms that aim to eliminate hunger and ensure equitable access to food (Food and Agriculture Organization, 2023).

Concept of mass media

Media is simply a means to deliver a message to the targeted audience. On the other hand, Mass media refers to a system of technology such as radio, TV, newspaper that is generally used as the primary means of communication to reach the majority of the mass people, such as the general public. Mass media is the means that people bring to their utility in order to communicate with people. It's a medium which provides information. According to Musaeva (2021) Mass media" is a deceptively simple term encompassing a countless array of institutions and individuals who differ in purpose, scope, method, and cultural context. Mass media include all forms of information communicated to large groups of people, from a handmade sign to an international news network. Mass media incorporates channels or networks used to communicate to people either in audio, visual, audiovisual, written, or orally.

Mass media refers to media technologies used to disseminate information to a wide audience. The key function of mass media is to communicate various messages through television, movies, advertising, radio, the internet, magazines, and newspapers. Mass media informs, educates, and entertains people in a wide variety of ways. As mentioned by Tafazzoli, & Bayat (2015) mass media has some advantage and sources that these advantages are resulted from the identity and function of new media that are mostly mass media. Broadcast

media transmit information electronically via media such as films, radio, recorded music, or television. Digital media comprises both Internet and mobile mass communication. Internet media comprise such services as email, social media sites, websites, and Internet-based radio and television.

Mass media means technology that is intended to reach a mass audience. It is the primary means of communication used to reach the vast majority of the general public. The most common platforms for mass media are newspapers, magazines, radio, television, and the Internet. The general public typically relies on the mass media to provide information regarding political issues, health issues, economic issues social issues, entertainment, and news. Adams,& Ahmad (2023) stated that mass media refers to the communication channels that are used to transmit information and messages to a large audience simultaneously. These channels include various forms of media, such as television, radio, print publications, and internet-based platforms. Mass media plays a significant role in shaping public opinion, disseminating news, and influencing social, cultural, and political discourse.

Concept of food

Generally, man needs food to survive hence the search for different delicacies that appeal to the taste bud or just for the momentary satisfaction. Food can then be defined as **any** substance consumed to provide nutritional support for the body. It is usually of plant or animal origin, and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins, or minerals. The substance is ingested by an organism and assimilated by the organism's cells in an effort to produce energy, maintain life, or stimulate growth. Plants, algae, and some microorganisms (bacteria) make their own food (nutrients) through photosynthesis, while animals and most other organisms obtain food by consuming other organisms or organic matter (Smithsonian Science Education Center, 2021) which is essential for the growth and development of the plant.

Food, as a substance consumed to provide nutritional support and energy to an organism, can be raw, processed, or formulated and is consumed orally by animals for growth, health, or pleasure. Therefore, food can be considered as a source of energy for the body that needs to support everyday activities and manufacture essential substances, which has a direct impact on the human body and its functionality. As a result, it is believed that the main factor affecting human health and happiness is the composition or contents of food (Chauhan & Khandelwal, 2023). Food can be classified, in accordance to their chemical property, to their function, to their essentiality, to their concentration and to their nutritive value. That is to say, according to the chemical nature, they include carbohydrates, vitamins, proteins, dietary fiber, fats, water and minerals; according to their function in the body, we have Energy giving foods, Body building foods Protective foods; according to their chemical property, they are organic and inorganic nutrients.

Humans rely upon both plants and animals as the source of their food. Plants as a food source are divided into seeds, fruits, vegetables, legumes, grains and nuts (**Fardet, 2017**). Food is therefore any substance (usually of animal or plant origin), consisting of nourishing and nutritive components such as carbohydrates, fats, proteins, essential mineral and

vitamins, which (when ingested and assimilated through digestion) sustains life, generates energy, and provides growth, maintenance, and health of the body.

Concept of food security

The concept of 'food security', introduced at the World Food Summit in 1996, refers to the physical, social and economic access to sufficient, safe and nutritious food, at all times, to meet dietary needs and food preferences for an active and healthy life. Food security moves away from narrow approaches that address hunger as the result of a deficit in global food production – such as the Malthusian approach – and acknowledges that while enough food is available in the world, those who suffer under nutrition cannot 'access' this food because of social and political dynamics that disempowered and marginalize them (Galie, 2019). Food security is defined as a situation that 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 an active and healthy life.

Food security is a primary concern of significant interest to practitioners, academics, and policymakers all over the globe. Food insecurity is also imperative due to its practical influence on each aspect of social life. According to Afzal (2023), Food security involves various factors like suitable food choices, fair prices, advancement in food safety, accessibility to open as well as competitive markets, healthy diets, and a more sustainable food supply chain. Food security is a combination of various problems interlinked with food utilization, accessibility, and availability. It exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996 cited in Frongillo, 2022).

Furthermore, the definition of food security requires that food be nutritious and meet dietary needs. Without adequate nutritious food, food security cannot be achieved, either by individuals or communities (Bahn, 2021). For this reason, food security is sometimes termed "food and nutrition security" and abbreviated as FNS, merging the concepts to emphasize both food and health requirements for a more complete definition.

Roles of mass media in promoting food security

Food security, defined by the Food and Agriculture Organization (FAO) as the state when "all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food," is essential for human survival and development. The mass media plays a crucial role in promoting food security by influencing public awareness, government policies, and food-related behaviors. The media's ability to disseminate information widely makes it an effective tool in tackling food insecurity and ensuring that food-related issues are addressed comprehensively. The following are the roles of mass media in promoting food security as mentioned by numerous scholars including Munene and Kebenei (2021).

Raising Public Awareness on Food Security Issues:

Mass media serves as an essential platform for raising public awareness about food security challenges, such as food shortages, malnutrition, and hunger. Media channels like television, radio, newspapers, and online platforms report on food crises, enabling the public to

understand the gravity of these issues. By providing factual reports, media outlets bring attention to local and global food security concerns, leading to increased awareness and prompting action from various stakeholders, including non-governmental organizations and humanitarian agencies.

Advocacy for Agricultural Innovation and Sustainable Practices:

The media plays a vital role in advocating for modern agricultural practices that enhance food production and sustainability. Through documentaries, news reports, and expert interviews, media outlets can highlight innovative agricultural techniques, such as precision farming, climate-smart agriculture, and the use of biotechnology in improving crop yields. By showcasing success stories from different parts of the world, the media encourages farmers to adopt these practices and helps policymakers create favorable environments for agricultural development.

Shaping Food Security Policies and Government Actions:

Mass media serves as a platform for debate and dialogue on food security policies. By covering issues related to food governance, media outlets can influence government actions, ensuring that food security remains a priority on the national agenda. Investigative journalism can also uncover instances of mismanagement or corruption in the agricultural sector, holding governments accountable. In many cases, media campaigns have successfully pushed for reforms in food distribution systems and social safety nets, which are crucial for mitigating food insecurity, especially among vulnerable populations.

Promoting Food Education and Healthy Diets:

Mass media plays an educational role by promoting nutrition and healthy diets as part of food security. Through campaigns, talk shows, and social media content, the media educates the public on the importance of balanced diets and sustainable consumption habits. This can help reduce food wastage, ensure better nutrition, and reduce the prevalence of malnutrition. Public service announcements and documentaries also highlight the benefits of local food production and consumption, promoting food security by encouraging communities to rely on their agricultural output.

Mobilizing Resources and Support for Food Security Programs:

The media plays an instrumental role in mobilizing support and resources for food security programs. During times of crisis, such as famines, droughts, or natural disasters, the media can quickly draw attention to affected areas, prompting local and international humanitarian responses. This leads to the provision of aid, such as food supplies and agricultural inputs, to vulnerable populations. By amplifying the voices of those in need and highlighting their struggles, the media contributes to the global fight against hunger.

Effect of promoting food security and zero hunger in Nigeria

Promoting food security and achieving zero hunger in Nigeria are central to the country's development agenda, given its large population and the challenges it faces in food

production, distribution, and accessibility. As one of the United Nations' Sustainable Development Goals (SDG 2), zero hunger seeks to "end hunger, achieve food security, improve nutrition, and promote sustainable agriculture" by 2030. The effect of advancing food security and zero hunger initiatives in Nigeria has profound social, economic, and health implications, as it addresses malnutrition, stimulates economic growth, and fosters overall societal stability. Numerous scholars including Adeyemo and Adeagbo (2023) mentioned the effects of promoting food security and zero hunger in Nigeria to include the following: .

Reduction in Malnutrition and Improved Public Health

Promoting food security directly addresses the widespread malnutrition affecting millions of Nigerians, particularly children and vulnerable populations. According to reports from the United Nations, Nigeria faces severe malnutrition challenges, with stunting, wasting, and underweight conditions prevalent among children under five. By ensuring that everyone has access to sufficient, nutritious food, these programs reduce malnutrition-related health problems, such as impaired cognitive development, weakened immune systems, and higher susceptibility to diseases. Improved nutrition also results in enhanced physical and mental performance, leading to a healthier, more productive population.

Enhanced Agricultural Productivity

Efforts to promote food security often include strategies to boost agricultural productivity in Nigeria. This involves the adoption of modern farming technologies, improved seed varieties, and climate-smart agriculture practices. These initiatives enable farmers to increase crop yields, diversify production, and reduce post-harvest losses. The effect of such interventions is critical, as agriculture remains a significant contributor to Nigeria's economy, employing about 70% of the rural population. When farmers can produce more efficiently and sustainably, food availability increases, reducing dependence on food imports and enhancing national food sovereignty.

Poverty Reduction and Economic Growth

Food security is closely linked to poverty reduction, as agriculture and food-related sectors are major sources of income for millions of Nigerians. By promoting food security through agricultural development, employment opportunities are created, particularly in rural areas, where poverty levels are highest. Increased agricultural productivity leads to more stable incomes for farmers, reducing poverty levels and contributing to economic growth. In addition, local food production reduces the need for expensive food imports, saving foreign exchange reserves and strengthening Nigeria's economy. As food security improves, disposable incomes increase, enabling households to invest in education, healthcare, and other essentials.

Social Stability and Conflict Mitigation

Food insecurity is often a driver of social unrest, particularly in regions where food scarcity is severe. In Nigeria, food insecurity has contributed to tensions and conflicts, especially in areas affected by Boko Haram insurgencies, herder-farmer clashes, and banditry in the North. By promoting food security and zero hunger initiatives, the government and non-

governmental organizations can mitigate the root causes of these conflicts. When people have stable access to food, the likelihood of conflict over scarce resources decreases, promoting peace and social cohesion. Furthermore, food security initiatives reduce rural-urban migration, which is often driven by hunger and poverty.

Promotion of Sustainable Development

Promoting food security aligns with the broader goals of sustainable development in Nigeria. Sustainable agricultural practices, which are often part of food security programs, protect the environment by conserving soil fertility, managing water resources efficiently, and reducing greenhouse gas emissions. These practices contribute to long-term food production, ensuring that future generations will also have access to sufficient food. In addition, zero hunger initiatives improve food distribution systems and ensure equitable access to food, fostering social inclusion and reducing inequalities, which are key elements of sustainable development.

Challenges of zero hunger in Nigeria

Nigeria faces significant challenges in its quest to attain zero hunger, a United Nations Sustainable Development Goal (SDG) aimed at ending hunger, ensuring food security, and promoting sustainable agriculture. These challenges arise from various economic, environmental, and structural issues that threaten food availability, accessibility, and stability. Below are key challenges in Nigeria's efforts to achieve zero hunger:

- **Food Distribution Inefficiencies**

One of the primary challenges is the inefficient distribution of food across the country. While some regions experience food surpluses, others, particularly in the northern regions, face severe food shortages. Poor infrastructure, including inadequate transportation networks and storage facilities, exacerbates this problem. A study by Adesina (2020) highlights that food wastage due to spoilage and poor logistics is responsible for a significant portion of the food deficit, leading to higher levels of hunger, particularly in rural areas.

- **High Population Growth**

Nigeria's rapidly growing population, projected to become the third most populous country by 2050, puts immense pressure on its food production systems. With the current population growth rate, the demand for food is outstripping agricultural productivity. According to Adekunle and Okunola (2019), unless food production increases significantly, Nigeria will struggle to meet the food needs of its population, making zero hunger an increasingly elusive goal.

- **Gender Inequality in Agriculture**

Gender inequality is another critical challenge affecting food security in Nigeria. Women, who make up a large portion of the agricultural workforce, often lack access to land, credit, and essential farming inputs, which limits their productivity. Women's involvement in decision-making in agriculture remains minimal, despite their contributions to food production. According to Olayemi and Oyekan (2019), empowering women in agriculture by

providing them equal access to resources could boost agricultural productivity and contribute to the reduction of hunger.

- **Limited Access to Agricultural Technology**

The use of modern agricultural technologies in Nigeria remains low, particularly among smallholder farmers. Access to mechanized farming equipment, high-quality seeds, and improved irrigation systems is limited, which affects crop yields. Additionally, there is a lack of adequate research and extension services that could help farmers adopt new farming techniques. According to the International Food Policy Research Institute (IFPRI, 2020), investing in agricultural technology is crucial for boosting productivity and addressing food insecurity challenges in Nigeria.

- **Climate Change and Environmental Factors**

Climate change is a major challenge affecting Nigeria's ability to achieve zero hunger. Unpredictable weather patterns, including droughts, floods, and desertification, are increasingly impacting agricultural productivity. Farmers in many regions of the country struggle with shifting planting seasons, declining water availability, and soil degradation. According to Ibrahim et al. (2021), without concerted efforts to mitigate the effects of climate change, food production will continue to suffer, pushing more people into hunger.

Ways of promoting food security and zero hunger in Nigeria

Achieving food security and eliminating hunger in Nigeria requires strategic efforts across various sectors, including agriculture, policy implementation, and social interventions. Below are intelligent strategies that can help Nigeria work towards ensuring food security and zero hunger.

- **Investment in Sustainable Agriculture**

Sustainable agriculture practices are essential for increasing food production while preserving the environment. The promotion of eco-friendly farming methods, such as crop rotation, organic farming, and agroforestry, helps to maintain soil fertility and reduce environmental degradation. Investments in irrigation systems, drought-resistant crops, and modern agricultural technology are key to enhancing productivity in rural areas. According to Adebayo et al. (2020), countries that prioritize sustainable agricultural practices experience higher yields, increased food availability, and better resilience to climate change impacts, which directly contributes to food security.

- **Improvement of Rural Infrastructure**

Nigeria's rural infrastructure, such as roads, storage facilities, and market access, remains a significant barrier to achieving food security. Poor infrastructure leads to high post-harvest losses, limiting the amount of food that reaches the market. Developing better rural roads and transportation networks ensures that farmers can transport their produce efficiently, minimizing food wastage. Additionally, the construction of storage and processing facilities helps preserve perishable goods, thus stabilizing food supply throughout the year.

Strengthening rural infrastructure encourages more farmers to expand their activities, contributing to national food security goals.

- **Empowering Smallholder Farmers**

Smallholder farmers form the backbone of Nigeria's agricultural sector, yet they often face challenges such as limited access to credit, inputs, and knowledge. Empowering these farmers through government-led initiatives, private sector partnerships, and non-governmental organizations (NGOs) can significantly improve food production. Programs that provide access to affordable seeds, fertilizers, and farming equipment, coupled with training on best agricultural practices, can transform the productivity of small-scale farmers. A study by Oyekale (2019) showed that smallholder farmers who receive support from agricultural extension services increase their yields by up to 40%, contributing to food security and reducing hunger in their communities.

- **Social Protection Programs**

Implementing effective social protection programs is critical to achieving zero hunger, especially for vulnerable populations such as children, women, and the elderly. Social safety nets like conditional cash transfers, food assistance programs, and school feeding initiatives play a crucial role in alleviating hunger and improving nutrition. For instance, the Home Grown School Feeding Programme (HGSFP) in Nigeria has proven to be an effective tool in providing nutritious meals to millions of children, improving school attendance and combating malnutrition (Adesina & Ogunmodede, 2019). Such programs also create a market for local farmers, fostering a sustainable cycle of food production and consumption.

- **Policy Reforms and Governance**

Strong policy frameworks and good governance are essential for addressing food insecurity in Nigeria. The implementation of clear, inclusive agricultural policies that prioritize smallholder farmers, promote food self-sufficiency, and encourage the use of modern agricultural technologies is crucial. The Nigerian government's Agricultural Promotion Policy (APP) 2016–2020 aimed to increase food production, reduce dependency on imports, and create employment within the agricultural sector (Federal Ministry of Agriculture and Rural Development, 2020). Such policies, when well-executed, help to foster a conducive environment for agricultural development, which in turn reduces hunger.

Conclusion

In conclusion, mass media plays a vital role in promoting food security and advancing the goal of Zero Hunger in Nigeria. By educating the public on sustainable agricultural practices and nutritional awareness, media platforms empower individuals and communities to make informed choices. They also serve as a critical watchdog, holding stakeholders accountable and advocating for policy changes that address food insecurity. Through targeted campaigns and informative content, mass media fosters dialogue and collaboration among various sectors, driving collective action. Ultimately, leveraging the power of mass media can significantly contribute to a more sustainable and equitable food system in Nigeria, enhancing resilience against hunger.

Recommendations

1. Mass media should develop more dedicated programs that focus on sustainable farming practices, innovative technologies, and success stories from local farmers to inspire and educate audiences.
2. Implement campaigns that highlight the importance of balanced diets, micronutrients, and the benefits of consuming local foods to combat malnutrition.
3. Utilize social media and mobile technology to reach younger audiences and rural communities, providing them with timely information on food production, market access, and nutritional tips.

References

- Adams, E. J., & Ahmad, S. A. (2023). Mass Media And Professionalism in Nigeria Radio And Television. *International Journal of Human Capital and Innovative Management*, 1(1), 38-53.
- Adebayo, K., Adeola, S. O., & Bolaji, A. A. (2020). Sustainable agricultural practices for food security in Nigeria. *Journal of Agricultural Sustainability*, 12(3), 165-176.
- Adekunle, O., & Okunola, T. (2019). Population growth and food security challenges in Nigeria. *Journal of Demographic Studies*, 18(2), 102-115.
- Adesina, A. A., Fashola, O. S., & Adeoye, K. A. (2020). The impact of food distribution inefficiencies on hunger in Nigeria. *Food Security Journal*, 12(3), 215-229.
- Adesina, O. A., & Ogunmodede, S. O. (2019). The impact of Nigeria's Home Grown School Feeding Programme on food security. *Food Policy Journal*, 34(2), 204-218.
- Adeyemo, T. A. and Adeagbo, A. O. (2023). SDG 2 – Ending Hunger: The Effect of Nigeria's Land Titling on Production Output and Food Security of Farming Households. *Frontier in Sustainable Food System*, 7. <https://doi.org/10.3389/fsufs.2023.1290576>.
- Afzal M. F., Ahmad M. H., Imran M., Khan M. K., Zubair M., Akram S. & Khalid M. A. (2023). Introductory Chapter: Concept of Food Security and Its Overview.
- Bahn R. A., Hwalla N. & Labban S. (2021). Leveraging nutrition for food security: the integration of nutrition in the four pillars of food security. *Food Security and Nutrition*, pp. 1-32.
- Chauhan, D. & Khandelwal, S. (2023). Basics in food science and technology. Fundamentals of Food Biotechnology (pp.43-55)
- Fardet, A. (2017). "New Concepts and Paradigms for the Protective Effects of Plant-Based Food Components in Relation to Food Complexity". *Vegetarian and Plant-Based Diets in Health and Disease Prevention*. Elsevier. pp. 293–312.
- Federal Ministry of Agriculture and Rural Development. (2020). *The Agricultural Promotion Policy: Achievements and Challenges*. Government Publication.
- Food and Agriculture Organization. (2023). "The State of Food Security and Nutrition in Nigeria."
- Frongillo E. A. (2022). Validity and cross-context equivalence of experience-based measures of food insecurity. *Global Food Security*, 32, 100599
- Galie A. (2019). *Encyclopedia of Food Security and Sustainability*. Retrieved from: <https://www.sciencedirect.com/topics/food-science/food-security>
- Ibrahim, M., Abdullahi, Y., & Yusuf, A. (2021). Climate change and food insecurity in Nigeria: Mitigating the risks. *International Journal of Environmental Studies*, 28(4), 140-155.

- IFPRI. (2020). Agricultural technology adoption and food security in Nigeria. International Food Policy Research Institute Reports.
- Munene, M. and Kebenei, D. (2021). Media Coverage on Food Security Information. *Strategic Journal of Business and Change Management*, 8(1), 124-131.
- Musaeva, G. (2021). The Concept Of Mass Media And Its Current Significance And Its Other Disadvantages And Advantages Sides. *Eurasian Journal of Humanities and Social Sciences*, 3, 60-63.
- Nigerian Institute of Food Science and Technology. (2022). "Nutrition Education and Public Awareness."
- Ogunjimi, L. O. (2021). "The Impact of Media on Agricultural Practices in Nigeria."
- Olayemi, M., & Oyekan, T. (2019). Gender inequality and food security in Nigeria. *African Journal of Agriculture and Food Systems*, 24(1), 88-98.
- Oyekale, A. S. (2019). Enhancing food security through smallholder farmers' support programs in Nigeria. *Development Policy Review*, 37(1), 108-127.
- Smithsonian Science Education Center (2021). "What is Photosynthesis". Available at <https://ssec.si.edu/stemvisions-blog/what-photosynthesis>
- Tafazzoli, H., & Bayat, M. (2015). Mass Communication and Mass Media: A Concept of Game Theory Approach.
- World Food Programme. (2023). "Nigeria: Overview of Food Insecurity."