EFFECTIVENESS OF RADIO BROADCASTING IN FACILITATING THE ADOPTION OF AGRICULTURAL INNOVATIONS AMONG FARMERS IN EDERAL CAPITAL TERRITORY, ABUJA.

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Abstract

This study investigates the effectiveness of radio broadcasting in facilitating the adoption of agricultural innovations among farmers in the Federal Capital Territory (FCT), Abuja. Theoretical foundation of the study was Diffusion of Innovation Theory The study adopted a descriptive survey design, with data collected from 123 farmers selected across one area council within the FCT using a multi-stage sampling method. Structured questionnaires were employed to gather information from farmers. Data analysis involved the use of simple table, frequency and percentage. Findings revealed that radio broadcast exposure has played a significant role in facilitating the adoption of various agricultural innovations among farmers in the Federal Capital Territory (FCT), Abuja. **This study concluded that the radio broadcast has proven effective through** transmitting agricultural programmes in facilitating the adoption of agricultural innovation among farmers in the Federal Capital Territory (FCT), Abuja. Based on the findings and conclusion this study recommended, among other things that agricultural programmes should be broadcast multiple times during the week and at peak listening times (early morning or late evening) to ensure that more farmers can access the information because repetition reinforces learning and increases the likelihood of adoption.

Keywords: Radio Broadcasting, Adoption of Agricultural Innovations and Farmers in F CT, Abuja.

Introduction

The global agricultural sector is undergoing significant transformation due to the increasing impacts of climate change, population growth, and food insecurity. According to the Food and Agriculture Organization (FAO, 2022), global food production must increase by 60% by 2050 to meet the demands of a projected population of 9.7 billion. However, achieving this target is challenged by climate-induced disruptions, such as erratic rainfall, prolonged droughts, and extreme weather events, which threaten agricultural productivity. In response, agricultural innovations, including improved seed varieties, precision farming technologies, and sustainable practices, have emerged as critical tools for enhancing resilience and productivity in farming systems worldwide (FAO, 2022).

The adoption of these innovations is essential for achieving global food security and mitigating the adverse effects of climate change. However, the dissemination and uptake of agricultural technologies remain uneven, particularly in developing regions where access to information and resources is limited. Effective communication strategies, including the use of mass media, are increasingly recognized as vital for bridging

knowledge gaps and promoting the adoption of innovations among farmers (World Bank, 2022).

In Africa, agriculture remains the backbone of many economies, contributing an average of 15% to the continent's GDP and employing over 60% of the labor force (African Union, 2021). Despite its significance, the sector faces numerous challenges, including low productivity, limited access to modern technologies, and the impacts of climate change. For instance, sub-Saharan Africa loses an estimated $1.6 billion annually due to climate-related agricultural losses (FAO, 2022). These challenges underscore the urgent need for the adoption of agricultural innovations to enhance productivity, ensure food security, and improve livelihoods.

However, the adoption of innovations in Africa is hindered by several factors, including inadequate extension services, poor infrastructure, and limited access to information. Traditional extension systems, which rely on face-to-face interactions between farmers and extension agents, are often inefficient due to the high farmer-to-extension-worker ratio. For example, in many African countries, there is only one extension worker for every 1,000 farmers, compared to the recommended ratio of 1:400 (IFPRI, 2021). This gap highlights the need for alternative communication channels, such as radio broadcasting, to complement traditional extension services and facilitate the dissemination of agricultural information.

In Nigeria, agriculture is a critical sector, contributing approximately 23% to the GDP and employing about 70% of the labor force (National Bureau of Statistics, 2023). Despite its importance, the sector faces significant challenges, including low productivity, limited access to modern technologies, and the impacts of climate change. For instance, Nigeria's agricultural productivity growth rate has stagnated at 1.5% annually, far below the 6% target required to achieve food security (World Bank, 2022). Additionally, the country's reliance on rain-fed agriculture makes it highly vulnerable to climate variability, with recent estimates suggesting that crop yields could decline by 10-25% by 2050 if adaptation measures are not implemented (African Union, 2021).

The Nigerian government has implemented various agricultural programmes, such as the Agricultural Transformation Agenda (ATA) and the Anchor Borrowers' Programme (ABP), to address these challenges. However, the success of these initiatives has been limited by poor policy implementation, inadequate funding, and limited access to information among farmers (Ibrahim & Suleiman, 2020). For example, only 30% of Nigerian farmers have access to extension services, and even fewer have access to modern agricultural technologies (FMARD, 2022). This information gap underscores the need for effective communication strategies to facilitate the dissemination and adoption of agricultural innovations. In Nigeria as with some African countries, even though rural farmers h ave the potentials to integrate innovative practices (which are barely the case) in their production processes, awareness of available agricultural innovations and level of adoption remain poorly documented. That study argued that understanding how the farmers perceived available agricultural innovations, the major challenges they are frequently reported and evaluating suggested strategies for innovation diffusions are important steps for policy reviews and refocusing AIS to be functional in a locality. This study seeks to address these gaps by exploring the effectiveness of radio and television

broadcasting in facilitating the adoption of agricultural innovations in Abuja

Statement of the Problem

Agriculture remains a cornerstone of Nigeria's economy, contributing significantly to food security and national development. However, low agricultural productivity among farmers persists as a major challenge, often linked to the limited adoption of agricultural innovations. Despite the critical role of modern agricultural practices in enhancing yields and sustainability, their dissemination and adoption remain inadequate. This is compounded by the insufficient availability of innovations and a limited culture of innovation adoption among farmers (Ibrahim & Suleiman, 2020). Such challenges raise critical questions about the barriers to innovation adoption. Specifically, is the issue rooted in the inadequacies of extension services in educating and reaching smallholder farmers, or are farmers constrained by systemic barriers such as risk aversion, limited resources, or infrastructural deficits (Agbamu, 2016).

A significant factor contributing to the low adoption rates is the persistence of a traditional top-down approach to agricultural innovation transfer. This linear model positions farmers as passive recipients of knowledge rather than active participants in the innovation process. By prioritizing centralized knowledge creation and dissemination, this approach often fails to address the contextual needs and realities of farmers. It also disregards alternative knowledge sources, such as those from private-sector stakeholders, thereby limiting the breadth and relevance of innovation efforts (African Union, 2021).

Compounding this issue is the lack of a robust Agricultural Innovation System (AIS) in Nigeria. The AIS framework emphasizes multi-stakeholder participation, fostering collaboration between public institutions, private organizations, NGOs, and farmers. However, in practice, many agricultural innovations are developed in isolation, disconnected from the end-users' needs. This disconnect often results in poor alignment with farmers' realities, hindering adoption rates. Furthermore, structural barriers, such as information asymmetry, insufficient technical knowledge, and inadequate infrastructure, exacerbate the problem, limiting farmers' capacity to innovate and adopt practices that could improve their productivity (Agbamu, 2016).

Few studies have systematically explored the specific role of radio and television broadcasting in influencing the adoption of agricultural innovations among farmers in Abuja. Existing research predominantly focuses on national or regional trends, often overlooking the unique and localized experiences of farmers in specific states or communities (Norton & Alwang, 2020). This neglect creates a critical gap in understanding how localized radio and television programming might address farmers' specific needs and challenges.

Objectives of the Study

The main objective of this study is to examine the effectiveness of radio broadcasting in facilitating the adoption of agricultural innovation among farmers in the Federal Capital Territory (FCT), Abuja.

The specific objectives are to:

1. Find out how the radio broadcast messages on agricultural innovation programmes are transmitted to the farmers in FCT Abuja, Nigeria.

2. Examine the extent to which radio broadcast influence farmers' knowledge regarding agricultural innovations practices.
3. To investigate the agricultural innovations that farmers in FCT Abuja have adopted through radio broadcast exposure.

Conceptual Clarification

Radio broadcasting refers to the transmission of audio content via electromagnetic waves to a dispersed audience through radio receivers. In the context of agricultural communication, radio broadcasting serves as a medium through which information, education, and advisory services are delivered to farmers, often in real time and across vast geographical locations. It encompasses various formats such as talk shows, expert interviews, jingles, drama, call-in sessions, and interactive discussions tailored to address the information needs of listeners. Conceptually, radio broadcasting is grounded in the diffusion of innovation theory, which positions mass media as a catalyst in creating awareness and knowledge that precede the adoption of new practices. Norton & Alwang, (2020). described radio as an indispensable tool for agricultural extension in Nigeria due to its affordability, mobility, and reach, especially in rural areas where literacy levels are low. Similarly, FMARD, (2022) emphasized that radio broadcasting allows for repeated dissemination of messages, which reinforces learning and encourages gradual behavioral change among farmers. Within the FCT and similar regions, agricultural radio programmes such as "Farm Diary" on Kapital FM have been documented by Ede and Asogwa (2020) as key platforms for disseminating innovation-related content, including new farming techniques, weather forecasts, and market prices. Conceptually, therefore, radio broadcasting is more than just a means of transmitting information—it is a strategic communication tool capable of shaping farmers' knowledge, attitudes, and practices when applied effectively within culturally and contextually appropriate frameworks.

The adoption of agricultural innovations refers to the decision-making process by which farmers accept, integrate, and consistently use new technologies, practices, or ideas to improve productivity, efficiency, and sustainability in farming. These innovations may include improved seed varieties, mechanized tools, climate-smart techniques, pest control methods, or enhanced post-harvest storage solutions. Conceptually, the adoption process is rooted in Rogers' Diffusion of Innovation Theory, which outlines five key stages: awareness, interest, evaluation, trial, and adoption. The progression through these stages is influenced by factors such as the perceived benefits of the innovation, compatibility with existing practices, complexity, trialability, and observability. Empirical evidence highlights that access to timely and relevant information plays a crucial role in facilitating adoption. According to Adebiyi and Okunlola (2013), farmers who are well-informed about the advantages and practical use of new agricultural technologies are more likely to adopt them. Similarly, Obuh and Akinbile (2019) found that farmers in Northern Nigeria who received regular agricultural updates through media and extension agents showed significantly higher rates of adoption, particularly in the use of improved seedlings and fertilizer techniques. In the Federal Capital Territory, a study by Bello and Adejoh (2021) revealed that farmers exposed to consistent radio broadcasts on innovation practices demonstrated a higher willingness to experiment with and adopt modern farming methods compared to those without such

exposure. Thus, adoption is not merely the act of using an innovation but a dynamic, knowledge-driven process influenced by communication, access, and local relevance.

Farmers in the Federal Capital Territory (FCT), Abuja, represent a diverse group of agricultural practitioners engaged in various forms of crop and livestock production within both rural and peri-urban settings. Unlike in predominantly rural states, farming in the FCT is shaped by the region's unique blend of urban expansion, government presence, and semi-rural communities, which creates a distinct socio-economic and cultural profile. Conceptually, farmers in this area are typically smallholder or subsistence-oriented, relying on traditional farming methods, though there is a growing interest in adopting modern agricultural innovations, particularly among youth and cooperative groups. Empirical studies affirm the presence of active farming communities across the six area councils of the FCT—namely Abaji, Bwari, Gwagwalada, Kuje, Kwali, and Abuja Municipal Area Council (AMAC). According to a survey by the Federal Ministry of Agriculture and Rural Development (FMARD, 2020), a significant proportion of FCT farmers cultivate maize, yam, vegetables, and cassava, and engage in poultry and small ruminant rearing. The study also noted that while many farmers in the region have access to markets and information through radio and mobile platforms, they still face constraints such as land scarcity due to urban encroachment, limited access to extension services, and inadequate farming inputs. Similarly, research by Ede and Asogwa (2020) emphasized that farmers in peri-urban areas of Abuja are increasingly exposed to mass media but require tailored agricultural communication to meet their specific needs. Thus, farmers in the FCT are not a homogenous group but a dynamic agricultural population whose practices, exposure, and needs are influenced by both rural traditions and urban proximity.

Literature Review

The dissemination of agricultural innovation to farmers in Nigeria, particularly in the Federal Capital Territory (FCT) Abuja, plays a critical role in enhancing productivity, improving livelihoods, and fostering rural development. Among the various channels of communication, radio broadcasting stands out as a prominent and effective medium due to its wide reach, affordability, and ability to overcome literacy barriers. The Diffusion of Innovation Theory by Rogers (2003) provides a conceptual framework for understanding how new agricultural practices are communicated and adopted. According to the theory, mass media, especially radio, serves as an important communication channel in the early stages of innovation diffusion by creating awareness and persuading potential adopters. It highlights that the success of innovation transmission depends not only on the content of the message but also on the choice of communication channels, timing, and the socio-economic characteristics of the target audience (Arokoyo, 2011), The effectiveness of these radio programmes in reaching farmers depends on specific transmission strategies. Broadcasters often use local languages such as Hausa, Gwari, and Yoruba to ensure message comprehension among diverse farmer groups. Programmes are scheduled during early mornings or evenings when farmers are most likely to listen, and interactive formats such as call-ins, panel discussions, and radio dramas are used to enhance listener engagement. In some cases, radio producers conduct field visits to collect feedback from farmers, which helps improve the relevance and clarity of subsequent broadcasts. Despite these efforts, challenges persist (Eze, Iwu, and Ezeah 2015). Limited access to electricity or batteries can prevent

farmers from consistently listening to radio broadcasts. Moreover, many programmes operate on one-way communication models, reducing opportunities for farmers to seek clarification or offer feedback. The dominance of entertainment content over agricultural programming also limits airtime for agricultural innovation dissemination.

The adoption of agricultural innovations among farmers in the Federal Capital Territory (FCT), Abuja, has been significantly influenced by exposure to radio broadcast programmes tailored to farming communities. Radio, as a tool for agricultural extension and information dissemination, has played a strategic role in bridging the gap between research institutions and rural farmers by providing timely, practical, and accessible information. Given the low literacy rates and infrastructural challenges in many rural parts of Nigeria, radio offers a cost-effective and far-reaching platform that informs farmers about new technologies, practices, and inputs that can boost productivity and sustainability. Arokoyo (2011), in a study covering Kwali and Abaji Area Councils in FCT, found that over 60% of farmers who regularly listened to agricultural radio programmes had adopted at least one innovation such as improved seeds or better spacing techniques. Similarly, Olaniyi and Adewale (2012) revealed that the adoption of improved cassava varieties and fertilizer application methods increased by 45% among radio-listening farmers in Abuja over a two-year period. In another study by Eze, Iwu, and Ezeah (2015), it was reported that more than half of the surveyed farmers attributed their adoption of innovations—such as herbicide use, row planting, and the practice of cover cropping—to regular exposure to agricultural radio content. These innovations translated into improved yields, reduced labour costs, and better soil conservation.

Theoretical Framework

This research is anchored on the Diffusion Innovations Theory. The Diffusion of Innovation (DOI) theory, developed by Everett Rogers (1992), explains how new ideas, technologies, and practices spread through a social system. The theory outlines a five-stage process: knowledge, persuasion, decision, implementation, and confirmation. In the context of broadcasting, DOI theory helps understand how new formats, technologies, and content are adopted by audiences. For instance, the adoption of digital broadcasting or online streaming platforms can be analyzed through the lens of DOI theory.

In the context of farmers in Abuja, Nigeria, DOI theory can be applied to understand the diffusion of innovative agricultural practices, such as the use of precision farming techniques or climate-resilient crop varieties. The theory can help identify the factors influencing the adoption of these innovations, such as the role of opinion leaders, social networks, and communication channels. By understanding the diffusion process, agricultural extension agents and policymakers can design targeted interventions to facilitate the adoption of innovative practices among farmers, ultimately improving agricultural productivity and sustainability in the region (Rogers, 2003).

Methodology

This study adopted a descriptive survey research design to assess the effectiveness of **Wazobia FM 99.5, Cool FM 96.9, Raypower 100.5 FM, Aso Radio 93.5 FM, Kapital FM 92.9** – FRCN in transmitting programmes such as Lbarin Noma, Gbagyi Farmers, Agricultural Digest, **Agric Today, Farmers' Voice, Noma Tushen Arziki, Agro Corner** programmes **in** facilitating the adoption of agricultural innovation among farmers in the Federal Capital Territory (FCT), Abuja. The choice of this design is

based on its suitability for collecting, describing, and analyzing the views, experiences, and behaviors of a population in a natural setting ((Asemah, Gujbawo, Ekhareafo and Okpanachi ,2017). Abuja FCT has six (6) local government areas namely; Abaji, Abuja Municipal Area Council, Bwari, Kuje, gwagwalada and Kwali. A multi-stage sampling technique was employed: first, out of ten area councils namely; Bwari central, Kuduru, Igu, Shere, Kawu, Ushafa, Dutse Alhaji, Kubwa, Usuma, Bwari central were purposively selected based on their high concentration of farming activities. Within this area council, simple random sampling was used to select five farming communities from eleven communities namely; Barapa, Baran Rafi, Dauda, Dutse Alhaji, Barago farming communities. According to the information obtained from Abuja Chambers of Commerce, Industry, Mines and Agriculture (2024), shows that the population of this study is 132 registered farmers and based on the recommendation of Krejcie and Morgan (1970) the sample size is 123.

Data Presentation

Table 1: How Agricultural Programmes are transmitted by the radio broadcast.

Options	Abuja Frequency	%
How often agricultural programmes are transmitted on FCT Abuja radio?		
Once Weekly	40	32.5
Once weekly + a repeat broadcast	59	48.0
Twice weekly	17	13.8
Monthly	7	5.7
Total	**123**	**100**

Source: Field survey, 2025

The data in table 1 indicates that majority of 59 (48.0%) respondents agrees that agricultural programmes are transmitted once weekly + a repeat broadcast by the radio stations in Abuja.

Table 2: The extent to which radio broadcast influence farmers knowledge regarding agricultural innovations practices.

Statements	Abuja Frequency	%
To what extent has radio broadcast influence your knowledge to agricultural innovations practices?		
To a large extent	71	57.7
Little	32	26.0
Very little	20	16.3
Not at all	0	0
Total	**123**	**100**

Source: Field survey, 2025

The data in table 8 reveals that majority of 71 (57.7%) respondents affirmed to a large extent that radio broadcast have influenced their knowledge of agricultural innovation practices.

Table 3: Agricultural innovations adopted by farmers through radio broadcast exposure.

Statements	Abuja Frequency	%
Which of the following agricultural innovations have you adopted?		
A. Crops		
-Introduction of improved varietie3s of seeds -Judicious application of fertilisers of various types -Special and judicious distribution of crops in a mixture -Preservation methods -Judicious use of pesticides -Soil/type selection and fertiliser regions (plant geometry) -Appropriate planting density		
-All of the above	**60**	**48.8**
B. Livestock		
-Livestock housing -Livestock feeds -Pest and disease control -Crocrols exchange programme -Artificial incubation		
-All of the above	**25**	**20.3**
C. Fisheries		
-Home stage fish farm construction -Feeding of fish using local materials -Fish culture		
-All of the above	**20**	**16.3**
D. Agro-forestry		
-Soil conservation using contour -Snail keeping Modern bee-keeping -Alley cropping		
All of the Above	**18**	**14.6**
Total	**123**	**100**

Sources: Field Survey, 2025

Table 3: shows that majority of the respondents adopted variety of agricultural innovations through radio broadcast exposure with 60 (48.8%) farmers.

Discussion of Findings

The study finds out that agricultural programmes are transmitted by radio stations in Abuja once weekly, once weekly + a repeat broadcast, twice weekly and monthly. It reveals that radio remains a dominant and effective medium for transmitting agricultural innovation messages to farmers in the Federal Capital Territory (FCT) Abuja. This study agrees with Eze et al., (2015) that the mode of transmission is largely shaped by strategic use of language, scheduling, content structure, and feedback mechanisms. Most agricultural radio programmes are designed to be accessible by using local languages such as English, Hausa, Gwari, and Yoruba, nupe and pigin/vernacular which enables better understanding and cultural relevance among rural farmers. Agbamu (2016) added that broadcasters typically collaborate with agricultural experts, extension agents, and development partners to develop accurate and practical messages tailored to the local farming context.in addition, radio broadcasters frequently repeat important agricultural messages to reinforce learning and encourage adoption. According to the Food and Agriculture Organization (FAO, 2020), the effectiveness of radio in transmitting agricultural programmes is significantly enhanced when it adopts participatory and interactive approaches, allowing farmers not only to receive information but also to share their experiences and challenges

The result in table 2 indicates that radio broadcasts significantly influence farmers' knowledge regarding agricultural innovation practices in FCT Abuja. A large proportion of the farmers surveyed agreed to a large extent that radio broadcast have influenced their knowledge of agricultural innovations practices. . This reinforces the argument by Arokoyo (2011), who found that radio serves as a powerful tool for increasing awareness and understanding of agricultural technologies among rural farmers in Nigeria. The study revealed that consistent exposure to programmes such as *Farmers' Voice* and *Kasuwa da Gonaki* enabled farmers to stay informed about seasonal innovations, government agricultural interventions, and market trends.

The findings of this study also reveal that radio broadcast exposure has played a significant role in facilitating the adoption of various agricultural innovations among farmers in the Federal Capital Territory (FCT), Abuja. Many of the farmers reported adopting practices such as the use of introduction of improved varietie3s of seeds, judicious application of fertilizers of various types, special and judicious distribution of crops in a mixture, preservation methods, Judicious use of pesticides, soil/type selection and fertilizer regions (plant geometry), appropriate planting density, Livestock housing, Livestock feeds, -Pest and disease control, crocrols exchange programme, Artificial incubation, Home stage fish farm construction, Feeding of fish using local materials, Fish culture, soil conservation using contour, snail keeping, Modern bee-keeping and alley cropping. This outcome is consistent with the findings of Olaniyi and Adewale (2012), who reported that radio broadcasts were instrumental in enhancing the adoption of modern farming inputs among rural farmers in Nigeria. Farmers in the study also noted that radio

programmes such as *Kasuwa da Gonaki* and *Farmers' Voice* introduced them to innovations in post-harvest storage, organic composting, and simple mechanization tools, which they had not previously considered.

Conclusion

Based on the findings from the survey, this study concluded that radio broadcasting plays a pivotal role in the dissemination of agricultural innovations to farmers in the Federal Capital Territory (FCT), Abuja. **The radio stations; Wazobia FM 99.5, Cool FM 96.9, Raypower 100.5 FM, Aso Radio 93.5 FM, Kapital FM 92.9** – FRCN **has proven its effectiveness through** transmitting agricultural programmes such as Lbarin Noma, Gbagyi Farmers, Agricultural Digest, **Agric Today, Farmers' Voice, Noma Tushen Arziki, Agro Corner** in facilitating the adoption of agricultural innovation among farmers in the Federal Capital Territory (FCT), Abuja. Programmes transmitted in local languages, scheduled at convenient times, and featuring interactive and relatable content have significantly influenced farmers' awareness, knowledge, and adoption of innovations such as improved seed varieties, fertilizer usage, pest control methods, and post-harvest practices. The effectiveness of these programmes is further enhanced by their ability to bridge the communication gap between agricultural experts and rural farmers, especially in areas where formal extension services are limited.

Recommendation

Based on the findings of this study, the following recommendations are proposed to enhance the effectiveness of radio broadcasts in promoting agricultural innovations among farmers in the Federal Capital Territory (FCT), Abuja:

1. Agricultural programmes should be broadcast multiple times during the week and at peak listening times (early morning or late evening) to ensure that more farmers can access the information because repetition reinforces learning and increases the likelihood of adoption.
2. Radio stations and agricultural stakeholders should establish mechanisms for tracking the effectiveness of their programmes. Regular assessments and feedback from farmers will help improve content delivery and ensure that broadcast messages translate into real adoption and productivity gains.
3. To reinforce adoption, government agencies and NGOs should complement radio messages with field demonstrations, training workshops, and the distribution of relevant farm inputs. Lastly, there should be regular feedback mechanisms and follow-up assessments to evaluate the adoption rate and identify barriers, enabling continuous improvement of programmes content and delivery.

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