Harnessing Media Campaigns to Combat Food Insecurity Through Improved Seedlings and NANS Technology in Etsako West Local Government Area, Nigeria

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ABSTRACT

This study examines the role of media campaigns in promoting agricultural innovations aimed at combating food insecurity in Etsako West Local Government Area, Nigeria. Food insecurity persists in the region due to low adoption of improved farming techniques, including the use of improved seedlings and the Nigerian Agricultural and Nutritional Surveillance (NANS) technology. Using a mixed-methods approach, data collected from local farmers revealed that 33.9% first heard about these innovations through social media, followed by extension workers (25.7%) and television (13.8%). The findings indicate that media campaigns significantly raise awareness and influence farmers' attitudes, yet challenges such as limited access to inputs and inadequate extension worker training hinder widespread adoption. Focus group discussions further highlighted the popularity of WhatsApp and Facebook as key platforms for information dissemination and peer learning. The study emphasizes the need for more localized content in native languages, better training for extension agents, and enhanced government support to bridge the gap between awareness and practice. Recommendations include expanding media outreach via accessible channels and ensuring consistent follow-up to improve the uptake of agricultural innovations. This research contributes valuable insights toward harnessing media-driven agricultural extension to improve food security and sustainable farming in rural Nigerian communities.

Keywords: Media Campaigns, Food Security, Improved Seedlings, NANS Technology

INTRODUCTION

Nigeria continues to grapple with widespread food insecurity, a challenge that is deeply rooted in the broader context of sub-Sahara Africa's development struggles (Oni & Anyaegbunam, 2019). Thus persistent issue stems from a complex interplay of political instability, economic hardship, and environmental factors such as erratic climate patterns (World Food Programme [WFP], 2022). According to Prosekov and Ivanova (2018) events in the early 21st century make it abundantly evident that, despite tremendous international effort, food security is still a major concern. The adoption of modern farming techniques, including the use of improved seedlings and agricultural monitoring tools, has been linked to increased productivity, resilience, and sustainability (Kumar, Miserable, & Singh, 2018).

Improved Seedlings which a scientifically developed crop varieties that offer higher yields, pest resistance, and climate adaptability have been a crucial instrument in transforming food systems in various countries (Food and Agriculture Organization [FAO], 2020). Nigerian Agricultural and Nutritional Surveillance (NANS) Technology provides critical real-time data on agricultural and nutritional indicators, supporting decision-making and monitoring progress in food systems (Federal Ministry of Agriculture and Rural Development [FMARD], 2023).

Despite the availability of these innovations, their uptake among farmers in rural Nigeria remains relatively low. This is largely attributed to insufficient awareness, misinformation, and poor communication infrastructure (Okorie & Ani, 2021). Media campaigns are crucial to systematically influence behaviours. It can bridge the gap between research institutes and end-users of Agricultural technologies (Aina, 2019).

Notwithstanding, well-planned campaigns can create awareness, influence attitudes, and stimulate the adoption of Innovations, especially when tailored to suit local contexts. Thus, effective communication plays a crucial role in transforming raw data into meaningful information that can drive change within communities. Iguoba, Olley, and Akpor (2023) emphasize that information, much like a seed, requires proper distribution and processing to grow and yield beneficial outcomes.

In rural communities like Etsako West Local Government Area in Edo State, food security is exacerbated by traditional farming practices, inadequate access to improved agricultural inputs, poor rural infrastructure, and limited awareness of technological innovations.

Statement of the Problem

Governmental and non-governmental interventions have been carried out in Nigeria to eradicate food insecurity in Nigeria. Nevertheless, rural areas like those in Etsako West Local Government Area continue to experience significant food shortages and low agricultural productivity. This food insecurity is due to the inability to adapt to the latest agricultural practices which include digital monitoring technologies like the Nigerian Agricultural and Nutritional Surveillance (NANS) system.

Research has shown that communication aids agricultural growth (Obot, 2020; Aina, 2019). Yet, ineffective communication as a result of language barriers, low literacy levels and inadequate media penetration have hindered farmers from vital information that could improve their productivity and enhance food security. Furthermore, the inability to tailor media campaigns for local audiences is a problem, since it would not sensitize farmers on the benefits and usage of improved seedlings and NANS technology.

This study, therefore, seeks to interrogate this critical gap by examining media campaigns in combatting food Insecurity through improved seedlings and NANS technology in Etsako West Local Government Area, Nigeria

Aim and Objectives of the Study

The aim of this study is to assess the application of media campaigns in addressing food insecurity through the promotion of improved seedlings and NANS technology in Etsako West Local Government Area, with the objectives as follows,

1. To determine the level of awareness of improved seedlings and NANS technology among farmers in Etsako West.
2. To examine the influence of media campaigns on farmers' attitudes and practices related to agricultural innovation.
3. To identify the most effective media channels used in disseminating information on improved seedlings and NANS technology.
4. To assess the barriers affecting effective communication and adoption of improved agricultural innovations.

Research Questions

1. What is the level of awareness of improved seedlings and NANS technology among farmers in Etsako West Local Government Area?
2. To what extent have media campaigns influenced farmers' attitudes and adoption of improved agricultural innovations in the study area?
3. Which media channels are most effective in disseminating information on improved seedlings and NANS technology to local farmers?
4. What are the major communication barriers hindering farmers' access to and adoption of improved agricultural innovations in Etsako West?

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Significance of the Study

This study is significant in multiple ways. Firstly, it contributes to scholarly discourse on the intersection of communication and agricultural development, particularly in the Nigerian rural context. Secondly, it offers empirical evidence on the effectiveness of media campaigns in influencing farmer behaviour, thereby filling the knowledge gap in media-agricultural studies. Thirdly, the study provides practical recommendations for policy makers, development agencies, and media institutions involved in food security interventions. Overall, it supports the broader Sustainable Development Goal (SDGs).

Scope of the Study

This study is limited to Etsako West Local Government Area in Edo State, Nigeria. It specifically examines how media campaigns influence local farmers' awareness and adoption of improved seedlings and NANS technology as measures to reduce food insecurity. The research focuses on a selected number of farmers, media practitioners, and agricultural extension workers within the local government area. Only media platforms commonly accessed by rural farmers such as radio, television, and social media, are considered in the study. Furthermore, the investigation is restricted to agricultural practices related to crop production and livestock excluding fisheries. The study period covers communication and farming activities between 2019 and 2024.

LITERATURE REVIEW

Improve Seedling and NANS Technology in enhancing Food Security

Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs for an active and healthy life (FAO, 2009). Achieving this goal requires not only increasing food production but also improving the quality and resilience of agricultural systems. In this regard, the adoption of advanced agricultural inputs, such as improved seedlings and emerging technologies like NANS, plays a pivotal role. Improved seedlings are varieties of crops that have been scientifically developed to exhibit desirable traits such as higher yields, pest resistance, drought tolerance, and better nutritional content (Ajani & Onwubuya, 2013). The use of improved seedlings can significantly increase crop productivity, which is crucial for addressing food shortages. In Nigeria, government initiatives and donor-supported programs have facilitated the distribution of improved seedlings to smallholder farmers. Studies indicate that farmers who adopt improved seedlings tend to achieve higher yields and income levels compared to those using traditional varieties (Adetunji et al., 2019). This has a direct impact on food availability and accessibility at both household and community levels. The four pillars of food security are availability, access, utilisation, and stability, as well as their relationships are predicted to be adversely affected by climate change (Food and Agricultural Organization, 2018).

NANS technology involves the use of nutrient-activated nano-coatings on seeds to enhance their growth potential. This innovation enables seeds to absorb nutrients more efficiently, resulting in faster germination, improved root development, and higher resistance to environmental stresses (Kah et al., 2018). NANS-treated seeds also reduce the need for excessive chemical fertilizers, making agriculture more sustainable and environmentally friendly. Though still a relatively new approach in Nigeria, early trials of NANS technology have shown promising results in increasing crop yields and improving food security outcomes (Odeyemi & Alabi, 2020). By enhancing the performance of both traditional and improved seedlings, NANS technology can further strengthen the agricultural value chain.

The combined use of improved seedlings and NANS technology addresses several dimensions of food security:

1. Availability: Higher yields ensure that more food is produced per unit of land, helping to meet the needs of growing populations.
2. Accessibility: Increased productivity can lower market prices, making food more affordable for consumers.

3. Utilization: Improved varieties often contain enhanced nutritional profiles, contributing to better dietary outcomes.
4. Stability: Greater resilience to climate-related shocks ensures more consistent food production over time (FAO, 2014).

Despite their potential, several barriers hinder the widespread adoption of improved seedlings and NANS technology. These include limited awareness among farmers, inadequate extension services, high costs of inputs, and infrastructural constraints (Ajani & Onwubuya, 2013). Addressing these challenges requires coordinated efforts from government agencies, research institutions, and the private sector. Moreover, ensuring that smallholder farmers, particularly women and marginalized groups, have equitable access to these innovations is essential for inclusive agricultural development (Munthali et al., 2018).

Media Campaigns in Agricultural Development

The ability of the mass media to inform farmers about agriculture is indispensable (Hassan et al., 2020). For all parties involved—farmers, agribusinesses, legislators, and consumers—communication tactics are now crucial (Roxana et al., 2024). Media campaigns are strategic, coordinated efforts that use various communication channels to influence public knowledge, attitudes, and behaviors (Wakefield et al., 2010). In agriculture, these campaigns can raise awareness about improved farming techniques, disseminate information about government policies, promote market opportunities, and encourage sustainable practices. One of the critical challenges in agriculture is the knowledge gap between research institutions and farmers, particularly smallholders. Media campaigns help bridge this gap by translating complex scientific information into accessible formats. According to Chapman and Slaymaker (2002), agricultural radio programs in sub-Saharan Africa have significantly improved farmers' understanding of pest management, soil conservation, and crop diversification. Similarly, the use of television, mobile phones, and social media has expanded the reach and impact of agricultural messages (Aker, 2011).

Effective agricultural media campaigns leverage a mix of traditional and digital media. Radio remains a dominant medium in rural areas due to its affordability and wide reach (FAO, 2014). Interactive radio formats, such as call-in programs and farmer-to-farmer dialogues, encourage participation and foster trust. Television offers visual demonstrations of farming practices, making it an effective tool for teaching complex techniques. In countries like India, programs such as Krishi Darshan have been instrumental in promoting agricultural innovation since the 1960s (Mittal & Mehar, 2016). The rapid penetration of mobile technology has transformed agricultural communication. SMS alerts and mobile apps provide farmers with real-time weather forecasts, market prices, and agronomic advice (Aker, 2011). In Kenya, the M-Farm platform connects farmers to buyers and offers market intelligence, enhancing their bargaining power (Wyche & Steinfield, 2016). Social media is an emerging tool in agricultural campaigns, particularly among younger farmers. Platforms like Facebook and WhatsApp support knowledge sharing and peer-to-peer learning, creating virtual communities of practice (Bello & Adetunji, 2021).

Evidence suggests that well-designed media campaigns can lead to significant improvements in agricultural outcomes. A study by Van Campenhout et al. (2018) found that exposure to agricultural radio programs in Uganda increased farmers' adoption of improved maize seeds and fertilizer use. Similarly, mobile phone-based campaigns have been linked to better pest management practices and higher crop yields (Fabregas et al., 2019). Moreover, media campaigns contribute to behavioral change beyond technology adoption. They can challenge harmful practices, such as overuse of chemical inputs, and promote climate-smart agriculture (FAO, 2014). Campaigns also play a role in enhancing gender equity by encouraging women's participation in agricultural decision-making (Munthali et al., 2018).

Despite their potential, media campaigns in agriculture face several challenges. Literacy barriers, language diversity, and limited access to digital technologies can exclude marginalized groups. Ensuring content relevance, cultural appropriateness, and credibility is essential for campaign success (Chapman & Slaymaker, 2002). Additionally, sustainability is a concern. Many media campaigns are donor-funded and short-term, raising questions about their long-term impact. Integrating media campaigns into broader agricultural extension systems and fostering partnerships with local media outlets can enhance sustainability (FAO, 2014).

THEORETICAL FRAMEWORK

Diffusion of Innovations Theory

This study is grounded in Diffusion of Innovations Theory (Rogers, 2003), which explains how new ideas, practices, or products spread within a society. The theory outlines five stages of innovation adoption: knowledge, persuasion, decision, implementation, and confirmation. Adoption is influenced by media exposure, social systems, innovation attributes, and opinion leaders. Media campaigns facilitate the knowledge and persuasion stages by introducing innovations and shaping favorable attitudes.

This study applies Rogers' Diffusion of Innovations Theory (2003) to understand how media campaigns can accelerate the adoption of improved seedlings and NANS technology among farmers in Etsako West. By focusing on how media exposure and social influences facilitate awareness and positive attitudes, the theory provides a framework for analyzing the communication processes that drive agricultural innovation uptake in this context.

Empirical Review

Several empirical studies have investigated the role of media campaigns and information dissemination in promoting agricultural innovations among rural farmers, highlighting both the potentials and challenges of such interventions.

Aker (2011) analyzed the impact of mobile phone technology on agricultural extension in developing countries and found that increased access to timely and relevant information via mobile platforms significantly improved farmers' decision-making and productivity. However, the study emphasized that information alone is insufficient for adoption unless accompanied by access to inputs and extension support.

Similarly, Chapota et al. (2014) explored mass media's role in agricultural extension in Malawi, revealing that radio and social media programs substantially increased farmers' awareness of new farming techniques and inputs. Nonetheless, they noted a gap between awareness and actual adoption, often attributed to limited follow-up services and lack of adequate resources. This aligns with findings in the Nigerian context, where media campaigns have raised awareness but adoption rates of innovations like improved seedlings remain relatively low (Okeke et al., 2020).

In Nigeria, studies by Adeoye and Popoola (2011) demonstrated that extension workers remain crucial motivators for farmers to adopt new technologies, reinforcing the notion that interpersonal communication complements media efforts effectively. This is consistent with your study's finding that peer influence and extension workers have a greater motivational impact on adoption than media campaigns alone.

The use of social media platforms such as WhatsApp and Facebook for agricultural information sharing is gaining prominence among younger farmers, as identified by Mtega and Bernard (2014) in Tanzania. They argue that these platforms facilitate rapid dissemination and farmer-to-farmer interactions, but caution that misinformation and limited digital literacy can undermine their effectiveness. This resonates with concerns raised in your focus group discussions about the spread of inaccurate information and the need for trusted, localized content.

Lastly, Rogers' (2003) Diffusion of Innovations theory, widely applied in agricultural research, posits that while media campaigns are vital in raising awareness and shaping attitudes, the actual adoption of innovations depends on factors like perceived benefits, trialability, and social system support. Consistent with this theory, your study reveals that despite media exposure, challenges such as lack of inputs, funding, and follow-up services hinder the widespread adoption of improved seedlings and NANS technology in Etsako West.

Overall, the empirical evidence underscores that media campaigns are essential for awareness creation but must be integrated with extension services, peer networks, and infrastructural support to translate awareness into sustained adoption of agricultural innovations.

Despite efforts to combat food insecurity in Nigeria, rural areas like Etsako West still face low agricultural productivity due to poor adoption of innovations like improved seedlings and NANS technology. Existing studies highlight communication's role in agricultural growth but often overlook localized barriers such as language, literacy, and limited media access in rural communities. There is also limited research on how tailored media campaigns influence farmers' awareness and adoption of digital agricultural tools. Additionally, challenges related to misinformation, infrastructure, and sustained engagement through emerging platforms like social media remain underexplored. This study aims to fill these gaps by examining the effectiveness of media campaigns in promoting agricultural innovations within the specific context of Etsako West Local Government Area.

METHODOLOGY

Research Design

The study adopted a convergent parallel mixed-method design, integrating both qualitative and quantitative data to gain a comprehensive understanding of media influence on agricultural innovation adoption.

Population and Sampling of the Study

The population comprised farmers, agricultural extension officers, and media practitioners in Etsako West LGA. Nevertheless, there is no data base for them. Thus, the study used the stratified random sampling technique to select 150 farmers. Additionally, focus group was conducted with five agricultural officers and local media personnel.

Data Collection

This study employed a mixed-methods approach, combining both quantitative and qualitative data collection techniques to provide a comprehensive understanding of farmers' awareness and adoption of improved seedlings and NANS technology in Etsako West Local Government Area, Nigeria.

A structured survey questionnaire was used to collect quantitative data from farmers across selected communities within Etsako West LGA. The survey instrument included both closed-ended questions (using Likert scales and multiple-choice formats) and open-ended questions to capture participants' experiences, perceptions, and challenges related to agricultural innovations and media access. A total of 143 respondents participated in the survey, representing a cross-section of gender, age groups, education levels, and farming experience. The survey covered areas such as farmers' level of awareness of improved seedlings and NANS technology, media channels used for agricultural information, frequency of accessing agricultural programs, and perceived effectiveness of media campaigns.

To complement the survey data and provide deeper insights into the challenges and dynamics of agricultural communication in rural settings, a focus group discussion (FGD) was conducted with a purposively selected group of farmers. The FGD comprised five participants with diverse backgrounds in farming experience and media use. Key topics explored included:

1. The effectiveness of various media channels in promoting improved seedlings and NANS technology
2. Challenges encountered in communicating agricultural innovations to rural farmers
3. Cultural and literacy factors influencing media effectiveness

The qualitative data collected through the FGD enriched the quantitative findings by offering nuanced perspectives on barriers to access, trust in media content, and preferred communication strategies among farmers.

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Participation in both the survey and the focus group discussion was voluntary. Respondents were informed of the study's purpose and assured of the confidentiality and anonymity of their responses. Informed consent was obtained from all participants prior to data collection.

Data Analysis

The study employed both quantitative and qualitative data analysis techniques to ensure a comprehensive understanding of farmers' awareness and adoption of improved seedlings and NANS technology in Etsako West Local Government Area.

Quantitative Data Analysis

The survey data collected from 143 respondents were coded and entered into Microsoft Excel for cleaning and organization, after which they were analyzed using descriptive statistics. Frequencies and percentages were calculated to summarize responses related to demographic characteristics, level of awareness, media usage patterns, adoption of improved seedlings, and perceived effectiveness of media campaigns. The results were presented in tables, graphs, and charts to aid clarity and interpretation.

Descriptive analysis was particularly useful in highlighting trends in media access, channels of agricultural communication, and key barriers faced by farmers. For instance, charts showing sources of initial awareness and frequency of media program access provided visual insights into how agricultural innovations are disseminated across the study area.

Qualitative Data Analysis

The focus group discussion (FGD) was transcribed verbatim and subjected to thematic analysis. A careful reading of the transcripts allowed for the identification of recurring themes and patterns related to communication challenges, cultural and literacy barriers, and perceptions of media effectiveness. Responses from the open-ended survey questions were also analyzed using thematic coding to identify commonalities with the FGD data.

The emergent themes included:

1. Network and infrastructure limitations
2. Language and literacy barriers
3. Trust and misinformation in media content
4. Cultural preferences for face-to-face communication
5. Economic constraints

Integrating the qualitative findings with the survey results enabled a richer interpretation of the data, revealing not only the level of awareness and adoption but also the contextual factors influencing media effectiveness and farmers' decision-making processes.

The use of data triangulation—combining quantitative survey data with qualitative insights from the FGD—strengthened the validity and reliability of the study's findings (Creswell & Plano Clark, 2018). This approach ensured that the analysis captured both the breadth and depth of farmers' experiences with agricultural innovations and media campaigns in the study area.

Presentation Of Data

Survey

A total of 150 questionnaires were distributed to farmers. To facilitate participation, three research assistants were engaged to guide the farmers in completing the forms and to provide interpretation where necessary.

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Nevertheless, only 143 were answered well and submitted to the researcher, the results are below:

Table 1: Respondents' Gender

Gender	No. of Response	Percentage (%)
Male	60	42%
Female	83	58%
Total	**143**	**100%**

Source: Field Survey, 2025

Table 1 presents the gender distribution of respondents in the survey on harnessing media campaigns to combat food insecurity through improved seedlings and NANS technology in Etsako West Local Government Area, Nigeria. Of the respondents, 42% are male and 58% are female.

Table 2: Respondents' Age

Age	No. of Response	Percentage (%)
Under 30	37	25.9%
30-39	59	41.3%
40-49	22	15.4%
50 & Above	25	17.5%
Total	**143**	**100%**

Source: Field Survey, 2025

Table 2 presents the age distribution of the respondents. The largest proportion of respondents, 59 (41.3%), are within the 30–39 years age range. This is followed by 37 respondents (25.9%) who are under 30 years of age. Respondents aged 50 years and above constitute 17.5%, while those between 40–49 years represent the smallest group at 15.4%. Based on these findings, it can be inferred that the primary agricultural workforce in the study area is concentrated within the 30–39 years age bracket.

Table 3: Educational Level of Respondents'

Education Level	No. of Response	Percentage (%)
No formal education	13	9.1%
Primary	38	26.6%
Secondary	42	29.4%
Tertiary	50	35%
Total	**143**	**100%**

Source: Field Survey, 2025

Table 3 presents the educational qualifications of the 143 respondents who participated in the survey. Among them, 9.1% have no formal education, 26.6% attained primary education, 29.4% completed secondary education, and 35% pursued education at the tertiary level. This distribution suggests that a significant proportion of the respondents possess at least secondary education, which may positively influence their capacity to understand and adopt information disseminated through media campaigns aimed at improving agricultural practices and combating food insecurity.

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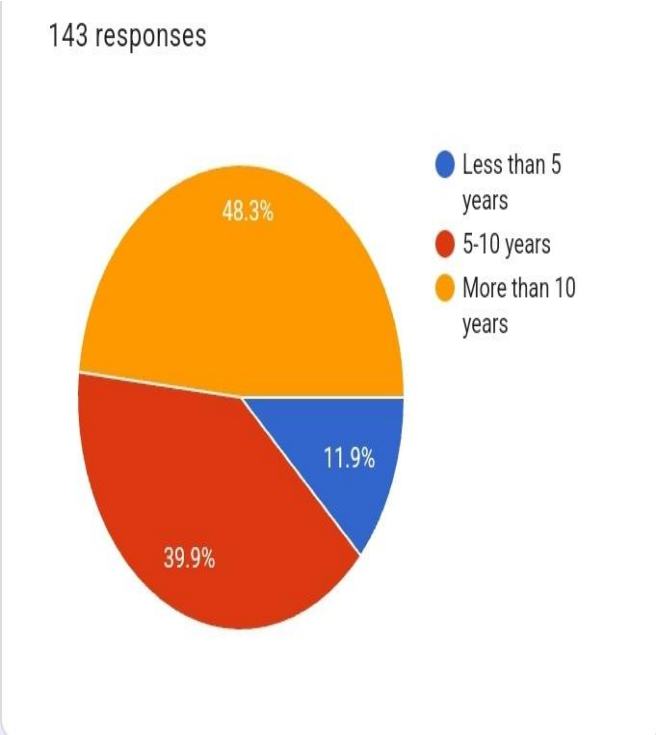
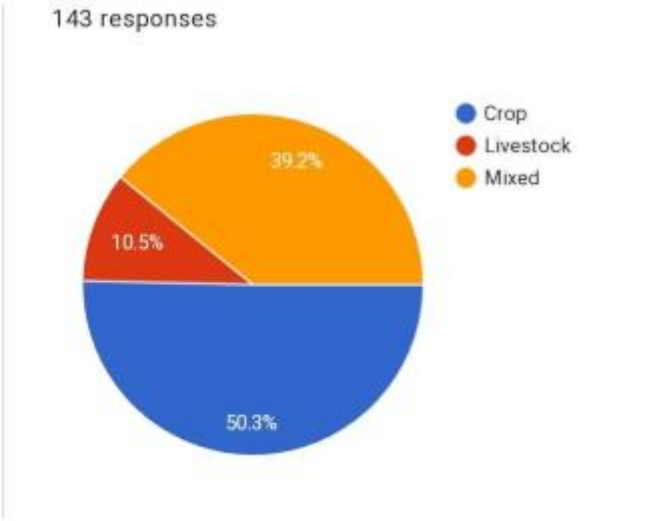
Table 4: Respondents' Years of Farming Experience



Source: Field Survey, 2025

Table 4 shows a chart that illustrates the respondents' years of farming experience. Of the 143 respondents, 48.3% have been engaged in farming for more than 10 years, representing the majority. Those with 5–10 years of experience account for 39.9%, while respondents with less than 5 years of experience constitute the smallest group at 11.9%. These findings suggest that the majority of respondents are well-acquainted with agricultural practices, given their considerable years of farming experience.

Table 5: Respondents' nature of farming



Source: Field Survey, 2025

Table 5 shows a graph that presents the types of farming practiced by the respondents. Of the 143 respondents, a majority (50.3%) engage in crop farming, while 39.2% practice both crop and livestock farming. Only 10.5% of respondents focus exclusively on livestock farming. These findings suggest that most respondents are primarily crop farmers and are therefore likely to be familiar with, and receptive to, innovations related to improved seedlings.

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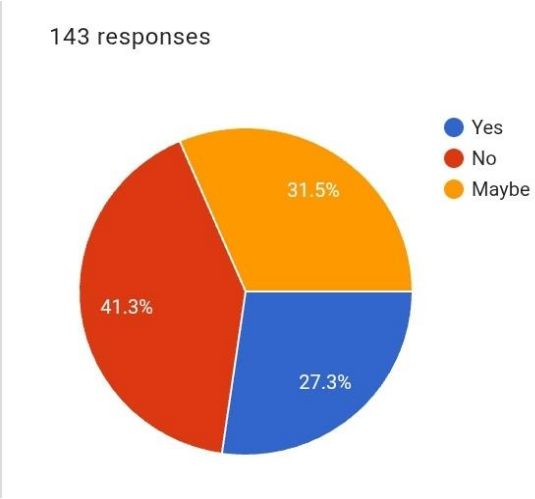
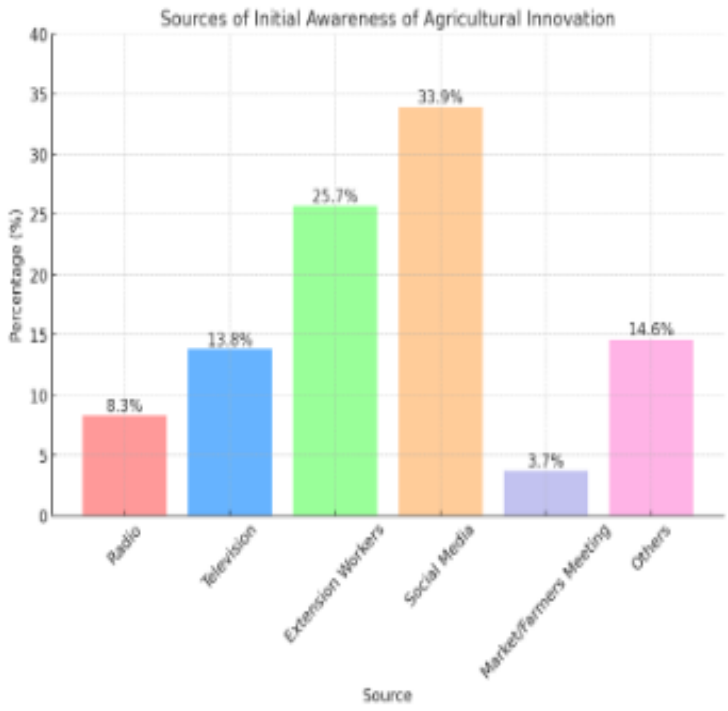
Table 6: Respondents' awareness of improved seedlings



Source: Field Survey, 2025

Table 6 shows a bar chart illustrates respondents' awareness of improved seedlings. Among the 143 respondents, 41.3%—the largest proportion—indicated that they were not aware of improved seedlings. This was followed by 31.5% who responded 'maybe', while only 27.3% reported being aware of improved seedlings. These results suggest that a significant proportion of the respondents lack adequate awareness of improved seedlings, highlighting the need for more targeted information and media campaigns to promote their adoption.

Table 7: Sources of Initial Awareness of Agricultural Innovation



Source: Field Survey, 2025

Table 7 shows that the majority of respondents first heard about improved seedlings and NANS technology through social media (33.9%), followed by extension workers (25.7%). Television (13.8%) and radio (8.3%) played a smaller role, while market or farmers' meetings (3.7%) and other sources (14.6%) were least cited. This suggests that an integrated communication strategy that combines both digital media and traditional channels would be most effective in increasing awareness and encouraging adoption of agricultural innovations in Etsako West LGA.

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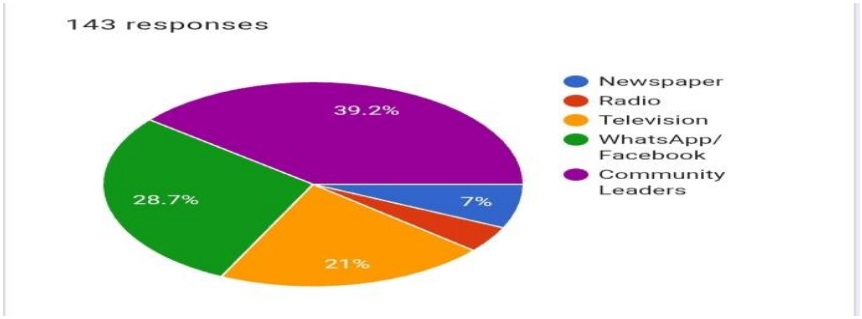
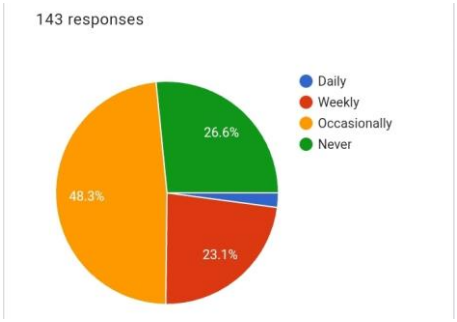
Table 8: Respondents' preferred media sources for accessing farming information.



Source: Field Survey, 2025

Table 8 shows a graph that presents the respondents' preferred media sources for accessing farming information. Of the 143 respondents, 7% rely on newspapers, 4.2% obtain information via radio, 21% use television, 28.7% access information through WhatsApp and Facebook, while 39.2% receive information from community leaders. These findings indicate that community leaders serve as the primary channel for disseminating agricultural information within the study area.

Table 9: How frequently respondents access agricultural programs through the media.



Source: Field Survey, 2025

Table 9 shows a graph illustrates how frequently respondents access agricultural programs through the media. The majority (48.3%) reported accessing such programs occasionally, while 26.6% indicated they had never accessed agricultural programs via the media. Additionally, 23.1% reported weekly access, and only 2.1% accessed agricultural content daily. These results suggest that there is significant room to enhance the reach and consistency of media campaigns, which are necessary to effectively address the agricultural information needs of the community.

Table 10: Respondents' on whether or not they have adopted improved seedlings in your farming practice?

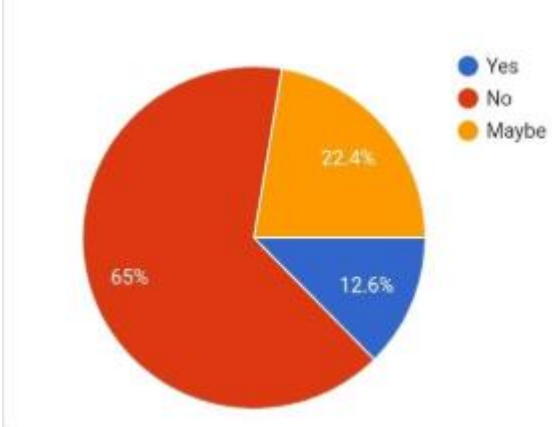


Table 10 shows a graph illustrates the respondents' adoption of improved seedlings in their farming practices. Among the 143 respondents, 12.6% indicated that they have adopted improved seedlings, 65% reported that

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they have not, and 22.4% were uncertain ('maybe'). These findings suggest that the majority of respondents have not yet adopted improved seedlings in their agricultural practices.

Table 11: Respondents' on what motivated you them to adopt improved seedlings.

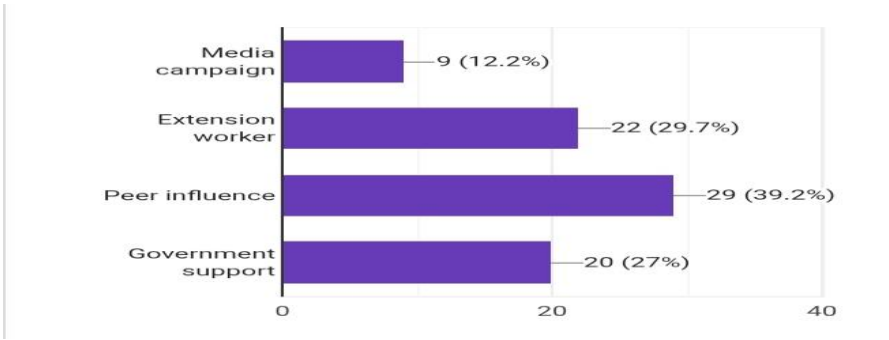

Table 11 presents data illustrating the factors that motivate respondents to adopt improved seedlings. Of the 143 total respondents, 74 provided responses to this question. Among them, 12.2% cited media campaigns as a source of motivation, 29.7% were influenced by extension workers, 39.2% were motivated by peer influence, and 27% by government support. These findings suggest that peer influence is the most significant motivating factor driving the adoption of improved seedlings among the respondents.

Table 12: Respondents' if they believe that media campaigns help them understand new farming techniques better?

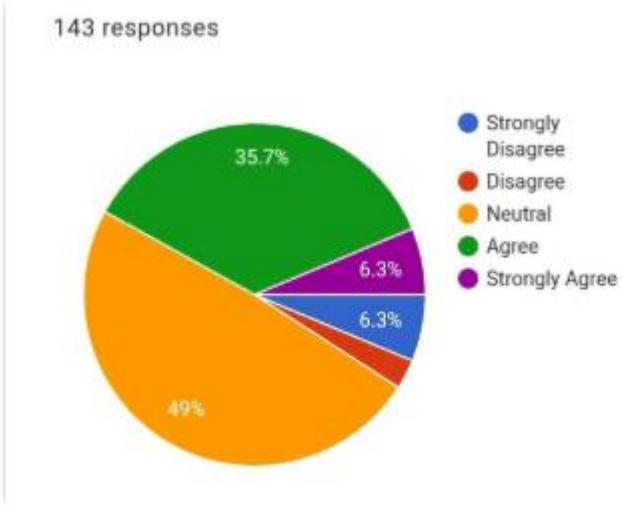

Table 13 presents data illustrating whether respondents believe that media campaigns help them better understand new farming techniques. The majority of respondents (49%) expressed a neutral stance, followed by 35.7% who agreed. Additionally, 6.3% strongly agreed, while another 6.3% strongly disagreed. Only 2.8% of respondents disagreed. These findings suggest that while there is some recognition of the potential value of media campaigns, a large proportion of respondents remain uncertain. This may indicate a need for more engaging and accessible media content, as many farmers appear to be on the fence and may not fully grasp the implications or potential benefits of such campaigns.

Table 13: What challenges do the respondents' face in accessing agricultural information through media? (Open-ended)

Themes	Description	Key Points from Responses
Media Platforms and Usage	Media channels most commonly used to reach farmers	WhatsApp, Facebook, television, and radio are popular platforms for communication and information sharing.

		Challenge includes poor network and infrastructure
Impact of Media Campaigns	Noticed effects of media campaigns on farmers' practices	Positive influence via videos and voice messages on WhatsApp; challenges include weak follow-up and input access.
Farmers Feedback on Campaigns	Ways farmers provide feedback on media campaigns	Informal feedback mostly through WhatsApp groups and personal visits; some critical feedback on unmet promises.
Suggestion for Media Improvement	Recommendations to enhance effectiveness of media in agricultural campaigns	Create local-language content, train extention workers better, increase government support due to financial constraints, expand rural reach

Focus Group

A focus group discussion was held with a total of five participants, consisting of two agricultural extension officers and three representatives from the local media. For confidentiality and clarity, the agricultural officers are identified as Participants R1 and R2, while the media personnel are referred to as R3, R4, and R5.

Can you describe your role in agricultural communication or technology promotion in Etsako West?

R1: As an agricultural extension worker in Etsako West, my main role is to serve as a link between government agricultural programs and the local farmers. I visit farming communities, educate them about modern farming techniques, and assist them in applying those practices on their farms. I also help with follow-up support and collect feedback from farmers to inform future interventions.

R2: I work directly with farmers, sharing information on better farming methods and linking them to useful programs or innovations.

R3: I work in the media sector here in Etsako West, and part of my responsibility involves sharing relevant agricultural information with local farmers. I use my media platform to educate them about recent developments and innovations in farming.

R4: I have a report on agricultural technology communication where Etsako West people are given education on the recent farming technology . This comes out in our news the last Saturday in every quarter with an expert in the studio to discuss.

R5: Local interpreter.

What media platforms are most commonly used to reach farmers in this area?

R1: From my experience, social media platforms like WhatsApp and Facebook have become surprisingly popular, especially among younger and more educated farmers. Some farmers also listen to radio programs, but WhatsApp groups have become the go-to for sharing updates, training materials, and voice notes in local dialects.

R2: Mostly WhatsApp and television. Farmers use WhatsApp for group discussions and updates, while TV is popular for visuals.

R3: Social media is the most used, Facebook in particular. It's widely accessed, even by farmers in remote communities.

R4: Television

R5: Radio

How do you evaluate the effectiveness of media in spreading awareness of improved seedlings and NANS technology?

R1: I can say that media has helped improve awareness about improved seedlings to some extent, especially when voice notes and videos are shared through WhatsApp. However, I must be honest—I'm not very conversant with NANS technology. In fact, I have not personally used or promoted it in my work here, and I'm not sure many farmers are even aware of it.

R2: Media has helped with awareness on improved seedlings, but I'm not familiar with NANS technology in this area.

R3: Media efforts have helped to an extent in creating awareness about improved seedlings. However, publicity around NANS technology has been limited, mostly due to the lack of government funding and support for structured campaigns.

R4: Very high , but inadequate fund to purchase the tools and insecurity are major challenges.

R5: Very effective

What are the main challenges encountered in communicating with rural farmers?

R1: A major challenge is low literacy levels—many farmers cannot read written materials, even when they are in local languages. Also, network coverage in some villages is poor, making it difficult to rely on digital communication. Another issue is that some farmers are skeptical of new practices unless they see practical demonstrations.

R2: Poor network, lack of training, and farmers' preference for hands-on demonstrations are big challenges.

R3: One key challenge is poor network coverage in some villages, which affects media outreach. Also, many farmers are reluctant to accept new farming techniques unless they witness actual demonstrations, and such efforts require both funding and proper training, which are often lacking.

R4: Language challenge because I don't understand Etsako and most of the farmers do not understand English language.

Are there cultural or literacy factors that limit media effectiveness?

R1: Yes, definitely. Language barriers play a big role. While many people speak Pidgin or local dialects, a lot of media content is in English, which limits its impact. Also, older farmers tend to rely more on face-to-face interactions and are less comfortable with mobile phones or digital platforms.

R2: Yes. Language barriers and low literacy levels reduce how much farmers understand from media content.

R3: Absolutely. Language is a big barrier. Much of the media content is delivered in English, while many locals speak only Pidgin or their native dialects. Additionally, older farmers tend to prefer face-to-face interactions and are not very comfortable using digital tools or smartphones.

R4: Yes, impact negatively.

R5: Illiteracy

Based on your observation, has there been any noticeable impact of media campaigns on farmers' practices?

R1: Yes, there's been some impact, especially with the use of short videos and voice messages shared through WhatsApp. Some farmers have tried out new seedlings after seeing their neighbors' success stories online or hearing about them through radio discussions. However, consistency in follow-up and access to the actual inputs are still issues.

R2: Some farmers try new seedlings after watching or hearing success stories, but follow-up is weak.

R3: Not significantly. The number of agriculture-focused media programs is limited due to lack of sponsorship. While some farmers have shown interest, especially after hearing success stories from peers—there is still a gap in consistent follow-up and access to the actual farming inputs.

R4: Yes, there is improvement In their cultivation process.

R5: Yes

Do farmers provide feedback on media campaigns or agricultural content?

R1: They do, though informally. In our WhatsApp groups, some farmers comment or send voice messages about what they've tried or questions they have. Others prefer to speak with us in person during community visits. So yes, feedback is there, but it's not always structured or documented.

R2: Yes, but mostly through casual comments or complaints in groups or during visits.

R3: Feedback is rare and, when it comes, it's often critical. Some farmers react with frustration, especially when promised interventions don't materialize or are poorly followed through.

R4: No

R5: Very much

What suggestions do you have for improving the use of media in agricultural innovation campaigns?

R1: First, I think we should create more local-language content, especially in audio and video formats. Farmers respond better to familiar voices and dialects. Also, more training for extension workers on new technologies like NANS would help, because we can't promote what we don't understand. Lastly, ensuring that farmers can access inputs after media campaigns is critical—awareness without access leads to frustration.

R2: Use local languages, more videos, and train extension workers better. Government support is key too.

R3: To make real progress, government and stakeholders need to invest in media-driven campaigns, particularly those focused on technologies like NANS. It would also help to develop more content in local languages, that can be shared through platforms like WhatsApp to increase accessibility and understanding.

R4: There should be communication through the use of local languages.

R5: The media programme should be designed in such that it appeals to rural farmers through extension workers. Channels for reach should build across rural areas if possible to improve media reach.

DISCUSSION OF FINDINGS

Research Question One: What is the level of awareness of improved seedlings and NANS technology among farmers in Etsako West Local Government Area?

The level of awareness of improved seedlings and NANS technology among farmers in Etsako West Local Government Area remains relatively low, as indicated by both the quantitative survey data and qualitative findings from the focus group discussion. Graph 6 of the study revealed that 41.3% of respondents were not aware of improved seedlings, 31.5% expressed uncertainty, while only 27.3% confirmed awareness. Awareness of NANS technology appears even more limited, with responses from the focus group discussion suggesting that most farmers are unfamiliar with this innovation. In terms of media exposure, Graph 9 illustrates that 48.3% of respondents access agricultural programs occasionally, 26.6% have never accessed such programs, 23.1% do so weekly, and only 2.1% daily. This indicates an inconsistent flow of agricultural information, which may contribute to the current low levels of awareness.

The qualitative insights from the focus group provide a nuanced understanding of these findings. Respondent 1 (R1) noted that while media—especially WhatsApp voice notes and videos—has helped improve awareness of improved seedlings, there remains little to no familiarity with NANS technology: "I must be honest—I'm not very conversant with NANS technology. In fact, I have not personally used or promoted it in my work here, and I'm not sure many farmers are even aware of it." Similarly, Respondent 2 (R2) stated, "Media has helped with awareness on improved seedlings, but I'm not familiar with NANS technology in this area." Respondent 3 (R3) further explained that while media campaigns have raised awareness to some extent, efforts around NANS technology have been hindered by a lack of structured publicity, government funding, and institutional support: "Publicity around NANS technology has been limited, mostly due to the lack of government funding and support for structured campaigns." Respondent 4 (R4) expressed a similar view, acknowledging the effectiveness of media but highlighting systemic barriers: "Very high, but inadequate funds to purchase the tools and insecurity are major challenges." Finally, Respondent 5 (R5) offered a more optimistic view, describing media efforts as "very effective" overall. These qualitative perspectives echo the observations of Chapman and Slaymaker (2002), who emphasize that the effectiveness of media in promoting agricultural innovation depends not only on the medium used but also on the consistency and depth of the messages delivered. Furthermore, Aker (2011) highlights that while mobile and digital platforms can accelerate information dissemination, the absence of structured, well-funded campaigns limits their reach and impact. Iguoba, Olley, and Akpor (2023) emphasize that information, much like a seed, requires careful distribution and processing to grow and produce beneficial outcomes. This highlights the crucial role of effective communication in transforming raw data into meaningful information that can drive positive change within communities. The findings also align with Ajani and Onwubuya (2013), who argue that awareness of agricultural innovations is often uneven, with new technologies such as NANS requiring targeted promotional strategies to ensure widespread adoption. Given that digital platforms like WhatsApp and Facebook already play a significant role in agricultural information sharing—as indicated by the 28.7% of respondents who use these channels (Graph 8)—there is clear potential to leverage these tools more effectively for promoting both improved seedlings and NANS technology (Bello & Adetunji, 2021).

Furthermore, the level of awareness of improved seedlings is moderate but uneven, while awareness of NANS technology remains very low in Etsako West Local Government Area. The findings underscore the need for more consistent, structured, and well-funded media campaigns to bridge these knowledge gaps and drive greater adoption of innovations that can enhance food security in the region. Without addressing these gaps, the transformative potential of improved seedlings and NANS technology will remain largely unrealized among local farmers (Wakefield et al., 2010).

Research Question Two: To what extent have media campaigns influenced farmers' attitudes and adoption of improved agricultural innovations in the study area?

The influence of media campaigns on farmers' attitudes and adoption of improved agricultural innovations

in Etsako West Local Government Area appears to be moderate but uneven, as revealed by the combined analysis of survey data and focus group discussions.

Quantitative data from the survey indicate a relatively low adoption rate of improved seedlings, with only 12.6% of respondents confirming adoption, 65% indicating non-adoption, and 22.4% uncertain. This suggests that, despite media efforts, the translation of awareness into tangible practice remains limited. Additionally, data on

motivation to adopt improved seedlings highlight that peer influence (39.2%) and extension workers (29.7%) have been more effective motivators than media campaigns (12.2%), indicating that interpersonal networks still play a dominant role in shaping farming decisions (Table 11).

Focus group discussions provide nuanced insights into this dynamic. Respondents acknowledged that media campaigns—particularly through WhatsApp videos, voice notes, and radio programs—have positively influenced farmers' attitudes by showcasing success stories and practical demonstrations. For example, one participant noted, "Some farmers have tried out new seedlings after seeing their neighbors' success stories online or hearing about them through radio discussions" (R1). However, consistent follow-up, availability of inputs, and structured support remain major challenges, which aligns with findings by Aker (2011) and Chapota et al. (2014), who emphasized that media-based awareness alone is insufficient to drive widespread adoption without complementary extension services and resource access.

The data also reveal that feedback mechanisms from farmers regarding media campaigns exist but are mostly informal and unstructured, as farmers often communicate through WhatsApp groups or personal visits rather than formal channels. This finding is consistent with Kumar et al. (2016), who argue that while digital platforms facilitate interaction, the lack of formal feedback systems limits the ability to evaluate campaign effectiveness and address farmers' evolving needs.

Moreover, some participants reported skepticism and frustration among farmers, particularly when promised interventions fail to materialize, echoing Rogers' (2003) observation that trust and reliability are critical factors in the diffusion of innovations. Without consistent government support and follow-up, media campaigns risk losing credibility and diminishing their impact on farmers' behaviors. Furthermore, media campaigns have contributed to raising awareness and somewhat influencing attitudes towards improved agricultural innovations in the study area, but their impact on actual adoption remains constrained by systemic challenges such as limited input availability, weak extension support, and inconsistent follow-up. Thus, a multi-pronged strategy integrating media outreach, peer influence, and extension services is necessary to enhance the adoption of innovations and strengthen farmers' engagement with media-driven agricultural programmes.

Research Question Three: Which media channels are most effective in disseminating information on improved seedlings and NANS technology to local farmers?

Findings from both the quantitative survey and qualitative focus group discussions suggest that media channels used to disseminate information on improved seedlings and NANS technology vary significantly across farmer demographics in Etsako West Local Government Area. The effectiveness of these channels is strongly influenced by factors such as accessibility, affordability, language use, and local trust.

Quantitative findings from Table 7 show that social media (33.9%) was the most frequently cited source of initial awareness about agricultural innovations, followed by extension workers (25.7%), television (13.8%), and radio (8.3%). Market and farmers' meetings, while still valued, played a lesser role (3.7%). The results suggest that digital platforms, particularly WhatsApp and Facebook, have become key tools for agricultural communication.

This trend was corroborated by the focus group discussion. Several participants highlighted the growing popularity of WhatsApp groups and Facebook for sharing updates, training materials, and voice notes in local dialects. As one respondent (R1) noted:

"WhatsApp groups have become the go-to for sharing updates, training materials, and voice notes in local dialects." Another participant (R2) added that television remains an important channel due to its visual advantages, while others (R5, R4) acknowledged that radio continues to serve an essential role, especially for older farmers and those in more remote areas.

These findings align with the work of Aker (2011), who noted that mobile-based technologies and social media have increasingly complemented traditional extension services in rural agricultural communication. Similarly, Chapota et al. (2014) observed that digital media are particularly effective in reaching younger

farmers and those with basic literacy skills, enabling the rapid dissemination of innovations such as improved seedlings.

However, the focus group also highlighted limitations of media platforms. Poor network connectivity, language barriers, and low digital literacy remain significant challenges in some areas, as previous studies have also documented (Aker & Mbiti, 2010). Furthermore, participants emphasized that face-to-face demonstrations and the role of extension workers are still critical for building trust and ensuring accurate understanding of complex innovations like NANS technology — a finding consistent with Rogers' (2003) diffusion of innovations theory, which emphasizes the importance of personal influence and trusted intermediaries in promoting the adoption of new agricultural practices.

In the nutshell, while social media currently stands out as the most effective and widely used channel for disseminating agricultural information in Etsako West LGA, a blended communication strategy—one that combines digital platforms, traditional media (radio, television), and extension services—is necessary to maximize reach and effectiveness. This approach is particularly important for addressing the needs of diverse farmer groups and overcoming barriers related to infrastructure and literacy (Chapota et al., 2014; Rogers, 2003).

Research Question Four: What are the major communication barriers hindering farmers' access to and adoption of improved agricultural innovations in Etsako West?

The open-ended responses and focus group discussion revealed a number of key challenges that farmers face in accessing agricultural information through media. A thematic analysis of the responses highlighted five major categories of barriers.

Poor Network and Infrastructure

A recurring challenge identified was inadequate network coverage and unreliable electricity supply in rural areas. Respondents noted issues such as "Network", "Electricity supply", and "Rural areas often have poor internet connectivity and inadequate energy supply." This theme was reinforced during the focus group discussion, where R1 and R3 emphasized that "network coverage in some villages is poor, making it difficult to rely on digital communication." This finding aligns with Chapman and Slaymaker (2002), who observed that infrastructural limitations remain a persistent barrier in rural agricultural communication.

Financial Constraints

Limited financial capacity was another common barrier. Respondents mentioned the high cost of accessing technology, stating that "Finance to pursue new ideas is not just seeing this equipment but doing it" and "From the buying of phone to even getting information." These insights reflect similar findings by Ajani and Onwubuya (2013), who argue that economic limitations hinder farmers' ability to adopt innovative agricultural practices.

Low Literacy and Language Barriers

Many farmers face challenges related to literacy and language. Respondents cited "Illiteracy", "Language challenges", and "English language content" as major obstacles. Focus group participants reinforced this theme; R1 explained that "many farmers cannot read written materials, even when they are in local languages," and R4 added, "Language challenge because I don't understand Etsako and most of the farmers do not understand English language." Additionally, in response to whether cultural or literacy factors limit media effectiveness, R1, R2, and R3 consistently emphasized that language barriers and low literacy levels significantly reduce the impact of media content. These insights echo Bello and Adetunji's (2021) argument that localized and accessible content is crucial for effective agricultural communication.

Lack of Quality Control and Trust in Media

Mistrust of media content and concerns over misinformation were also prominent. Respondents highlighted issues such as "The free nature of social media can lead to the dissemination of inaccurate information" and "The major challenge is the ability to tell the difference between the person telling the truth and the other telling lies." This aligns with Wakefield et al. (2010), who stress the importance of ensuring credibility in media campaigns to foster trust among target audiences.

Lack of Institutional Support and Preference for Face-to-Face Communication

Finally, both the open-ended responses and focus group participants pointed to a lack of institutional support and farmers' preference for traditional communication methods. Respondents mentioned "No proper advert", "Government", and "Non-institutionalization" as barriers. The focus group further elaborated on this, with R1 and R3 noting that farmers often prefer "practical demonstrations" and "face-to-face interactions" over digital tools, which require both funding and training to implement effectively. This finding underscores Aker's (2011) observation that while digital tools can complement traditional extension services, they cannot fully replace the value of personal, interactive communication in agricultural outreach.

Overall, the findings indicate that rural farmers in Etsako West Local Government Area face a complex interplay of infrastructural, economic, educational, linguistic, and cultural barriers that limit the effectiveness of media campaigns in promoting agricultural innovations. Addressing these challenges through targeted, culturally appropriate, and well-supported communication strategies will be essential to enhancing the adoption of improved seedlings and NANS technology in the region.

CONCLUSION

This study has highlighted the crucial role media campaigns play in promoting improved seedlings and NANS technology among farmers in Etsako West Local Government Area. The findings reveal that while awareness levels are growing, challenges such as language barriers, limited access to inputs, and inadequate media reach continue to hinder full adoption of these innovations. Engaging farmers through local languages, strengthening the capacity of extension workers, and ensuring consistent government support are essential steps toward bridging these gaps. Ultimately, improving the design and delivery of media campaigns can significantly enhance farmers' knowledge and practices, contributing to greater food security in the region. Continued efforts are needed to create more inclusive and accessible communication strategies that resonate with rural farming communities.

RECOMMENDATIONS

Based on the findings and insights from respondents, several key recommendations are proposed to improve the effectiveness of media campaigns in promoting agricultural innovations such as improved seedlings and NANS technology in Etsako West Local Government Area:

1. Develop Local Language Content: Media campaigns should prioritize creating audio and video materials in local dialects. Farmers show better engagement and understanding when information is delivered in familiar languages and culturally relevant formats.
2. Enhance Extension Worker Training: Extension workers need comprehensive and ongoing training on emerging technologies like NANS. Well-informed extension agents are essential for effectively communicating innovations and providing hands-on support to farmers.
3. Increase Government and Stakeholder Support: Sustainable investment from government and relevant stakeholders is crucial to fund media-driven agricultural campaigns. This support will enable wider outreach, consistent programming, and the development of tailored content.
4. Utilize Accessible Digital Platforms: Platforms such as WhatsApp and Facebook, which are already popular among farmers, should be leveraged more strategically to disseminate localized and easy-to-understand information.

5. Improve Access to Inputs: Awareness campaigns must be coupled with efforts to ensure that farmers can easily access the improved seedlings and NANS technology promoted. Without availability of inputs, media awareness alone will not translate into adoption.
6. Expand Media Reach in Rural Areas: Efforts should be made to improve infrastructure and media penetration in rural communities, including strengthening radio signals, internet access, and community-based communication channels, to ensure that information reaches even remote farmers.

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