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RESEARCH RESULT

Effectiveness of Radio in Disseminating Agricultural Information among Smallholder Farmers

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ABSTRACT

This study assesses the effectiveness of radio in disseminating agricultural information among smallholder farmers in Suru Local Government, Kebbi State, Nigeria. Utilizing a multistage sampling procedure, data were collected from 81 farmers via questionnaires and analyzed using descriptive statistics. The findings reveal that radio is a highly accessible, widely used, and positively perceived medium, well-suited to a farming population characterized by basic education and a preference for verbal communication. However, its effectiveness is constrained by the cost of acquiring radios and, more critically, by content-related issues such as a lack of in-depth information, irrelevant topics, and unsuitable scheduling. The study concludes that while radio remains a vital information source, its potential is not fully realized. It recommends enhancing program content with interactive, local-language formats, strategically rescheduling broadcasts, subsidizing radio costs, and integrating radio into a broader communication strategy that includes extension services and mobile technologies to improve agricultural knowledge dissemination.

Key words: Agricultural information dissemination, radio effectiveness, smallholder farmers

INTRODUCTION

The dissemination of agricultural information in order to educate farmers through media so as to increase their productivity and income cannot be overemphasized. In every economy, food production is central to the overall well-being of the populace because of its importance in the provision of food, income for farmers, raw materials for industries, employment, and foreign exchange for the nation.[1] In corroboration with the above,[2] opined that mass media provides information to farmers through agricultural programs, especially on radio and television, providing education, thus enhancing agricultural development.

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According to Khan *et al*.,[3] the radio can increase the level of awareness about agricultural activities through providing more information to stakeholders for increasing production. Buttressed the above when they said that mass media have the potential to provide timely and reliable information on weather, input prices, and marketing of the products to the stakeholders, especially the farmers.

Over the years, radio has been a dominant source of information for farmers in Kebbi State. Although the reach of local radio varies within the state,[4] it is estimated that between 80% and 90% of households in Africa have access to a functional radio. Radio preference as a mass medium has been attributed to its unique characteristics that allow the owners to expand the spectrum beyond urban areas, avoiding economic barriers to consumers paused by high-priced newspaper or TV subscriptions.

Over the years, farmers have been accessing agricultural information from extension workers through interpersonal communications. In the current situation, this seems to be inefficient given that the ratio of extension staff to farmers is increasing. Factors such as poor infrastructure have also contributed to this inefficiency. This situation calls for an alternative approach for agricultural information dissemination, such as the use of radio in extension service delivery. The need for the use of radio in agricultural extension is further justified by the fact that the farmer-extension officer ratio is too low and not efficient, and this complicates face-to-face interactions.

According to Heeks and Molla,[5] farmers need to access market information, land records, accounting, and farm management information, as well as management of pests and diseases. These can be accessed through well-planned rural development programs and radio use in extension services. The services offered by the extension system through radio can help farmers to access timely and relevant information about new crop varieties and livestock breeds, husbandry practices, fertilizers, and pesticides that will help them attain their maximum potential and hence the realization of the first millennium development goals (MDG) goal, which focuses on the eradication of extreme poverty and hunger.

Statement of the Research Problem

The study is designed to assess radio as a medium for farmers' information and the benefits of agricultural knowledge acquired from radio programs. The program Farming World is aired twice weekly for 15 min to create awareness on improved agricultural practices, to enlighten farmers on the application of herbicides, fertilizers, and pesticides.[6]

Improving farmers' knowledge in agriculture as a way of boosting food security, which is of utmost priority to governments across the globe. This is because vital information goes a long way in improving agricultural practices. The gap between the researcher and the farmer is even wider in the rural areas; large distances separate the researcher from the rural farmer. Other barriers, such as language and diversity of cultures, also come into play, making it even more difficult for the research information to reach the intended audiences. Radio can be used to disseminate agricultural research in the following ways.[6] Research findings can be distributed through radio to Non-governmental Organizations (NGOs) dealing in agriculture, Extension workers, Farmers themselves, and Academic Institutions. Radio can make the link between researchers and extension workers by offering information on where research can be obtained and used, how to pass it on to users, and communities' feedback regarding research.

The general objective of the study is to assess the farmers' perceived effectiveness of radio agricultural information in the study area, and the specific objectives of the study are to:

1. Described the socioeconomic characteristics of the farmers;
2. Determine the effectiveness of radio in disseminating agricultural information;
3. Identify farmers' perception of agricultural radio programs; and
4. Identify the constraint to agricultural information.

METHODOLOGY

Study Area

The study was conducted in Suru Local Government in Kebbi State. Suru was created in 1991 out of the Bunza LGA, which lies to the north and east. Its headquarters are in the town of Dakingari. The major ethnic groups include Fulani, Hausa, and Zabarmawa, with scattered small villages around the LGA. It shares an area of 1,352 km^2 and a population of 150,230 at the 2006 census. The yearly temperature in Suru, a district with a tropical wet and dry Savanna climate, is 33.59°C, 4.13% higher than Nigeria's average. The study specifically targeted smallholder farmers in Suru, Kebbi State, who receive Agricultural information and Agricultural extension services through the Radio.

A multistage sampling procedure was used to select 81 respondents for this study. The study further employed a purposive sampling technique in the selection of five agricultural extension agents across the local government area. Data for this study were obtained from both primary and secondary sources. The primary data were collected from the respondents directly with the aid of a structured questionnaire. The secondary source information

was obtained from the official records and related literature such as projects, seminars, journals, textbooks, and other relevant published materials. The data collected with respect to the objectives (1, 2, 3, and 4) were analyzed using descriptive statistics of frequency and percentages.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Smallholder Farmers

The profile of the surveyed farmers reveals a population that is relatively young, predominantly male, single, with basic education, and largely self-employed. The majority (51.9%) are in the 18–25 age group, with a further 32.1% aged 26–33. This indicates a youthful farming population. Younger farmers are often more receptive to new technologies and information, which is a positive indicator for the adoption of modern agricultural dissemination methods, including digital platforms.[7] However, they may also lack the long-term experience of older farmers.

Age and education:[8] In their study in Enugu State, they found that younger farmers were more likely to use information and communication technology (ICT) tools for agricultural information, but their educational level significantly influenced the depth of use.

The sample is skewed toward males (60.5%), which is a common finding in agricultural surveys in many developing contexts, often reflecting male gendered access to land, capital, and the title of "farmer," even when women contribute significantly to agricultural labor.[9,10] notes that sociocultural norms often limit women's participation in formal extension services and surveys, even though they constitute a substantial part of the agricultural labor force.

Marital status and educational level: The high percentage of single farmers (75.3%) is notable and may be linked to the young age profile. This could influence decision-making dynamics and labor availability on the farm. An overwhelming 87.5% of farmers have only a basic education. This is a critical finding, as educational level is a key determinant of how individuals access, process, and utilize information. Low formal education can be a barrier to understanding complex technical agricultural messages and using text-based digital platforms, making audio-based media like radio particularly relevant.[11]

Table 1: Socioeconomic characteristics of smallholder farmers

Variable	Frequency	Percentage
Age		
18–25	42	51.9
26–33	26	32.1
34-above	13	16
Gender		
Male	49	60.5
Female	32	39.5
Marital status		
Married	20	24.7
Single	61	75.3
Income range		
30,000–50,000	35	43.2
60,000–80,000	25	30.6
90,000 or more	21	26.2
Experience		
Full-time	22	27.2
Part-time	7	8.6
Self-employed	52	64.2
Educational level		
Basic education	71	87.5
Graduate	4	4.7
Master degree	6	7.8

Source: Field survey (2024)

Experience and income: Most farmers (64.2%) are self-employed. This suggests a high level of autonomy in decision-making regarding farming practices and the adoption of new information. The income is distributed across lower to middle ranges, with 43.2% earning between 30,000 and 50,000. This has implications for their ability to invest in technology, including radios and other ICTs.[11]

Farmer's Source of Agricultural Information

This table assesses the usage and satisfaction with various information sources. High usage of multiple sources has a strong majority of farmers who agree or strongly agree that they use radio (81.5%), extension agents (81.5%), television/newspapers (85.2%), and online platforms (93.8%). This indicates that farmers are not reliant on a single source but use a complementary mix of media. The high agreement for online platforms is surprising, given the low educational level, suggesting these

Table 2: Farmers' sources of agricultural information

S. No.	Question	Strongly disagree Freq (%)	Disagree Freq (%)	Agree Freq (%)	Strongly agree Freq (%)
1.	I use radio as a source of agricultural information	10 (4.9)	11 (13.6)	50 (61.7)	16 (19.8)
2.	I get access to agricultural information through an extension agent	1 (1.2)	14 (17.3)	54 (66.7)	12 (14.8)
3.	I use television and newspapers as a source of agricultural information	5 (6.2)	7 (8.6)	51 (63)	18 (22.2)
4.	I have daily access to agricultural information through radio	5 (6.2)	12 (14.8)	52 (64.2)	12 (14.8)
5.	I am satisfied with the extension services than radio	1 (1.2)	12 (14.8)	46 (56.8)	22 (27.2)
6.	I use online platforms as a source of agricultural information	2 (2.5)	3 (3.7)	53 (65.4)	23 (28.4)
7.	I prefer visual aids in receiving agricultural information	1 (1.2)	10 (12.3)	49 (60.6)	21 (25.9)
8.	I have never received extension services	7 (8.6)	20 (24.7)	45 (55.6)	9 (11.1)
9.	I prefer verbal communication in receiving agricultural information	3 (3.7)	7 (8.6)	55 (67.9)	16 (19.8)

Source: Field survey (2024)

Table 3: Farmers' perception toward the effectiveness of radio in disseminating agricultural information

S. No.	Question	Strongly disagree Freq (%)	Disagree Freq (%)	Agree Freq (%)	Strongly agree Freq (%)
1.	I am able to easily access agricultural information through radio	6 (7.4)	11 (13.6)	53 (65.4)	11 (13.6)
2.	I use radio as a source of agricultural information	2 (2.5)	15 (18.5)	52 (64.2)	12 (14.8)
3.	I am willing to actively support radio dissemination as the best way of receiving agricultural information	2 (2.5)	10 (12.3)	54 (66.7)	15 (18.5)
4.	I have access to a good radio signal in my locality	4 (4.9)	10 (12.3)	52 (64.3)	15 (18.5)
5.	I am digitally literate enough to make use of a radio	5 (6.2)	6 (7.4)	49 (60.5)	21 (25.9)
6.	I prefer to attend physical classes for agricultural information	5 (6.2)	4 (4.9)	51 (63)	21 (25.9)
7.	Listening to agricultural radio programs is boring	6 (7.4)	27 (33.3)	36 (44.5)	12 (14.8)
8.	I prefer listening to agricultural radio programs	5 (6.2)	4 (4.9)	62 (76.6)	10 (12.3)
9.	I have other sources of agricultural information other than radio dissemination	4 (4.9)	4 (4.9)	54 (66.7)	19 (23.5)
10.	Radio dissemination is more effective than other media methods	5 (6.2)	15 (18.5)	51 (63)	10 (12.3)

Source: Field survey (2024)

Table 4: Constraints in use of radio as agricultural information source

S. No.	Question	Strongly disagree Freq (%)	Disagree Freq (%)	Agree Freq (%)	Strongly agree Freq (%)
1.	Radio set is expensive to purchase and maintain	11 (13.6)	20 (24.7)	38 (46.9)	12 (14.8)
2.	Lack of deep learning is a constraint to agricultural radio program	15 (18.5)	33 (40.7)	28 (34.6)	5 (6.2)
3.	Lack of digital literacy is a constraint	13 (16)	37 (45.7)	26 (32.1)	5 (6.2)
4.	Problem of language barrier is a constraint to agricultural radio programs	16 (19.8)	37 (45.7)	24 (29.6)	4 (4.9)
5.	Missing of relevant agricultural radio programs is a constraint to radio programs	12 (14.8)	37 (45.7)	28 (34.6)	4 (4.9)
6.	Agricultural information dissemination via radio program is ineffective	14 (17.3)	25 (30.9)	40 (49.3)	2 (2.5)
7.	Lack of urban amenities, like radio mast, is a constraint	14 (17.3)	37 (45.7)	28 (34.5)	2 (2.5)

Source: Field survey (2024)

might be simple platforms such as WhatsApp or social media, used on basic smartphones.

Satisfaction with services has a significant proportion (84%) who are satisfied with extension services over the radio. This aligns with literature that emphasizes the importance of interpersonal communication and face-to-face interaction, in extension, as it allows for dialogue, practical demonstration, and trust-building. Nwachukwu and Onyeneke[12] found that demonstration methods and farmer-to-farmer exchanges were among the most effective extension teaching methods in Imo State, as they overcome literacy barriers. Idrisa *et al*.[13] highlighted the severe shortage of extension agents in Nigeria (far below the Food and Agriculture Organization recommendation), which means that many farmers have only sporadic or indirect contact with them, which might explain the conflicting responses.

Preference for visual and verbal aids has a strong majority prefer visual aids (86.5%) and verbal communication (87.7%). This underscores that farmers value clear, demonstrable, and interactive forms of communication. Radio, being audio-only, addresses the verbal preference but misses the visual component, which might explain the concurrent high use of television.

Farmer's Perception toward the Effectiveness of Radio in Disseminating Agricultural Information

This table investigates deeper into specific perceptions of radio as a dissemination tool. Accessibility and use: Most farmers find radio accessible (79%) and use it as a source (79%). A good radio signal in the locality is also reported by a majority (82.8%), which is a fundamental prerequisite for effectiveness. Positive perception and willingness: A high percentage (85.2%) is willing to support radio as a primary dissemination method, and 76.6% prefer listening to agricultural radio programs. This indicates a generally positive attitude toward the medium. Falaki *et al*.[14] argue that many agricultural radio programs in Nigeria are monologic (one-way communication) and lack participatory elements. They recommend integrating phone-in segments, drama, and local dialects to improve listener engagement and effectiveness.
Digital literacy for radio: Interestingly, 86.4% feel they are digitally literate enough to use a radio. This contrasts with potential barriers to more complex digital tools and reinforces radio's position as a simple, low-barrier technology. Ugbo *et al*.[15] radio is most effective not as a standalone tool, but as a component within a broader agricultural communication strategy that includes extension, print, and increasingly, mobile phones.

Constraints in the Use of Radio as Agricultural Information Source

This table identifies the specific barriers to using radio effectively. Cost as a moderate barrier: Nearly half (46.9% agree, 14.8% strongly agree) see the cost of purchasing and maintaining a radio set as a constraint. This is a practical economic barrier for low-income farmers. Content-related constraints: The most significant constraints are not directly about the radio itself, but about the quality and relevance of the content. Lack of deep learning: A majority (40.7% disagree, 34.6% agree) are neutral or agree that the lack of in-depth information is a problem. Radio is often criticized for providing superficial knowledge that is insufficient for complex agricultural decisions.[16] Missing relevant programs: A similar pattern (45.7% disagree, 34.6% agree) suggests that the scheduling or topics of programs do not always match farmers' needs. Lesser perceived barriers: Constraints like lack of digital literacy (38.3% agree), language barriers (34.5% agree), and lack of urban amenities (37% agree) were seen as less severe by the majority. The constraints related to the signal and relevant content are significant. Nwabueze *et al*.[16] found that the deregulation of the broadcast industry in Nigeria led to a focus on urban, entertainment-focused programming at the expense of rural, educational content such as agricultural programs. Furthermore, poor maintenance of transmission infrastructure in rural areas leads to poor signal reception.

CONCLUSION

Based on the study conducted in Suru Local Government, Kebbi State, radio is a highly accessible, widely used, and positively perceived medium for disseminating agricultural information among smallholder farmers. The findings indicate that a majority of farmers find radio easy to use, have good signal reception, and are willing to support it as a primary information source. Its audio-based nature aligns well with farmers' preference for verbal communication and is particularly suitable given the low levels of formal education among respondents.
However, the effectiveness of radio is constrained by several factors. The cost of purchasing and maintaining a radio set remains a barrier for some farmers. More significantly, issues related to program content, such as the lack of in-depth information, irrelevant topics, and unsuitable scheduling, limit its educational impact. While farmers use multiple information sources, including extension agents and online platforms, radio

remains a vital tool, especially in areas with limited extension services.

RECOMMENDATIONS

To enhance the effectiveness of radio in agricultural extension, the following actions are recommended:

1. Improve program content: Agricultural radio programs should be made more interactive, incorporating phone-in segments, local languages, and practical, in-depth explanations to address complex farming challenges
2. Reschedule programs strategically: Broadcast times should align with farmers' routines, and programs should be participatory to increase engagement and relevance
3. Subsidize radio access: The Government or NGOs should consider initiatives to reduce the cost of radios, making them more affordable for low-income farmers
4. Integrate with other media: Radio should be part of a broader communication strategy that includes mobile phones, extension visits, and visual aids to complement its audio-only format and reinforce learning
5. Strengthen infrastructure: Investment in rural broadcast infrastructure is needed to ensure consistent and clear radio signals across all farming communities.

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