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Adoption of Improved Farming Technologies through Communication Channels in Oyo State

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ABSTRACT

The study accessed the Adoption of improved farming technologies through communication channels in Oyo State. Multistage sampling technique was used to select a total number of 120 respondents that constituted the sample size. Data was analyzed using both descriptive (mean, percentages and frequencies) and inferential statistics [Logit regression). Most (58.33%) of the farmers were males, while the female folks were 41.67%. The mean age was 42.43 years. The marital status of respondents were single (28.33%), married (51.67%), separated (6.67%) and widowed (13.33%). The improved farm technology adoption status includes; yes (35.83%) and no (64.17%). The communication channels of respondents includes; radio (79.17%), field trip (35.83%), agricultural show (45.00%), demonstration (21.67%) and television (28.33%). It was concluded that the farmers had poor demonstration experience. Therefore, extension agents should intensify efforts towards sensitizing more on demonstrations.

Keywords: Communication channels, demonstration, field trip, improved technology, radio

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1. INTRODUCTION

Communication is the process by which participants create and share information/knowledge with each other with the aim of reaching a mutual understanding while communication channels are pathways through which information or message transmitted to an audience or receiver (Ogunremi, 2013). They are methods or vehicles by which information is transferred or received (Ariyo, et al, 2013). Some of the communication channels used in disseminating agricultural information include personal contacts; radio broadcasts; publications; field days; agricultural shows; demonstrations etc. These channels can be grouped into five categories. Physical channels which involve direct contact, this may include seminars, exhibitions. Non-physical channels, which include television, radio, phone calls, newspapers and other print media channels. Technical channels, this could be either physical or non-physical. Human discipline channel, for example, dress put on professionals such as farmers to predict the profession and last but not least, token of communication channels, which are channels in between physicals and non-physicals, this may include signals and gestures and other symbols (Ariyo, et al, 2013). Studies have highlighted the importance of these channels in agricultural extension services. For instance, research indicates that farmers often rely on informal sources such as fellow farmers and personal experience for information, while formal channels like extension services are underutilized (Ogunjobi, et al., 2023). In addition, the advent of social media has introduced new avenues for information dissemination.

The information on the utility of farming technology have been disseminated using a variety of communication channels including interpersonal and mass media channels like Radio, Televisions (TV), Computers, Mobile phones etc. However, acquisition and poor utilization of these channels by the farmers have led to the low rate of adoption of these innovations (Anifowose, 2013). This low level of utilization of communication channels seems to be further fuelled by inadequate trained extension agents, inappropriate communication channels and mismatch of farmers' abilities with the technical requirement for operating the various channels accessible to them and untimely broadcast of agricultural information (Okwu and Dauda, 2011)

Agricultural technology is the use of technology in agriculture with aim of improving yield, efficacy and profitability. Consequently, to curtail food and nutritional insecurity, which is a problem in our society today, smallholder farmers as a matter of fact must adopt improved

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agricultural technologies to increase productivity of food crops (Sennuga, *et al.*, 2020; Jegede, *et al.*, 2021). Increase in farm productivity which invariably increases farmers income and also reduction of poverty can only be achieved by adoption of these improved technologies (Jegede *et al.*, 2021). If there must be increase in the efficiency of agricultural production through agricultural modernization, farmers must to a large extent adopt improved agricultural technologies into their farming operations. However, agricultural extension communication, in the context of development, is specifically targeted toward improving the livelihoods of the participants (the farmers and extension staff) through the process of exchanging agricultural information between themselves and others (Fadiji and Sennuga 2020; Jegede *et al.*, 2021). Even though some breakthroughs have been made worldwide in the area of improved food processing technologies, Nigerian farmers still rely so much on traditional methods of processing which in turn reduces the level of productivity.

The inability of smallholder farmers to adopt most technologies aimed at increasing production in Nigeria has been associated with many challenges, these challenges have limited production and market orientation of smallholder farmers (Anumudu *et al.*, 2020). Among these challenges are lack of knowledge on improved and modern production skills which is undoubtedly caused by the poor level of extension services. Poor state of infrastructure such as roads, electricity, processing and storage facilities usually lead to high postharvest losses and consequently, reduced profitability. Other issue to be tackled to improved adoption include high cost of labour, inadequate finance, farmer's access to credit, high cost of inputs and low government presence to subsidize farm inputs, heavy reliance on traditional tools, poor extension contact and bad road network (Osuafor, Obianefo and Dike (2020). Adoption of improved production technologies such as good site selection, land preparation, improved varieties, method of planting, spacing, time of planting, fertilizer application, weeding and harvesting is essential to increase productivity among the smallholder farmers (Ehinmowo and Fatuase (2016).

The underutilization of formal communication channels, such as extension services, coupled with a reliance on informal sources, may hinder the adoption of improved farming technology. Furthermore, while social media presents a modern avenue for information dissemination, its potential remains underexploited, with farmers exhibiting only moderate awareness and neutral perceptions towards it (Okwu and Iorkaa, 2011). These issues underscore a

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critical gap in the effective transmission of agricultural innovations to farmers, potentially impeding productivity and sustainability in the sector. Studies have shown that communication channels used for dissemination have a positive relationship with behavioral change and improved adoption rates among rural farmer (Mtega, 2012).These channels offer an opportunity for extension services to effectively disseminate recommended practices on cocoa production to the farmers who use them. There are numerous accessible channels available to farmers in Nigeria. They include radio, television (TV), training and visit (T and V), demonstration plots among others (Nyamba and Mlozi, 2012).Extension services in Nigeria have not been able to effectively use the available communication channels such as radio, TV, T and V, face-to-face, and demonstration plots to diffuse and disseminate recommended farming practices among farmers (Ben and Jude, 2015). At present, most extension communication systems lack effective messages or are inappropriate and least preferred by farmers.

Specific objectives were to;

i. Describe socio-economic characteristics in the study area,
ii. Ascertain improved farm technology adoption status in the study area and
iii. Examine communication channels in the study area.

Hypothesis:

H_0: There is no significant relationship between improved farm technology adoption status and communication channels.

2. METHODOLOGY

Area of Study: The research was carried out in selected agrarian communities of Oyo State, Nigeria. Oyo State is bounded by Republic of Benin, Osun, Kwara and Ogun States and there are 33 local government areas (LGAs) in the State. According to 2006 National population census, the population of the State stood at 5,591,589.The weather conditions vary between the two distinct seasons in Nigeria; the rainy season (April - October) and the dry season (November - March). Oyo is located in the south west of Nigeria and it was among the 3 states carved out of the former Western State of Nigeria in 1976. Oyo State covers a total of 28, 249 square kilometres of land mass and it consists of old hard rocks and dome shaped hills. Oyo State is one of the food baskets

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in the federation. Agriculture is the major source of income for greater number of people in the State providing food and shelter, employment, industrial raw materials and remains an important source of internally generated revenue in the state. The climate of Oyo State is tropical with distinct wet and dry season with temperature ranging between 22-38^{0}C which favors the cultivation of food crops such as yam, cassava, millet, maize, fruits, vegetables and plantains), cash crops (such as cocoa, Tobacco and Timber) as well livestock like ruminant, poultry, fish and forest animals. The state has two vegetation zones which are derived savannah and forest zones.

The population of the study consists of crop and livestock farmers in the selected local government areas of the State. Multi stage sampling procedure was used for the study.

Stage 1: Involves random selection of 30% of the 17 rural L.G.As in Oyo State to give 5 local government areas namely: Afijio, Atisbo, Ibarapa-North, Iwajowa and Surulere L.G.As.

Stage 2: Involves purposive selection of two communities from each of the selected L.G.As with high percentage of smallholder farmers which were Jobele and Iware from Afijio LGA, Irawo and Sabe from Atisbo LGA, Igangan and Tapa from Ibarapa North, Iganna and Iwere-Ile from Iwajowa, while Iresaadu and Gambari were selected from Surulere LGA.

Stage 3: Involves simple random sampling of 12 farmers from each of the selected communities.

Stage 4: Stratification of farmers into crop and livestock farmers from each of the selected communities to give a total of 120 farmers considered for the study.

Data Collection and analysis: Data were collected through the use of structured questionnaire and interview schedule. Data were analyzed using descriptive (frequencies and percentages) and inferential (Logit regression) statistics.

3. RESULTS AND DISCUSSION

Socio economic characteristics of household of respondents

Socio economic characteristics of household of respondents are presented in Table 1. Most (58.33%) of the farmers were males, while the female folks were 41.67%. Thus, farming is dominated by males. This is probably because farming is labour intensive.

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The age categories of respondents includes; <40 years (28.33%), 40-50 years (57.50%) and > 50 years (14.17%). The 40-50 years category was the main category (58.33%) and the mean age was 42.43 years. This implies that the respondents were young, agile and productive. This could enhance their adoption of innovative farm technology.

The respondents had varying religious beliefs. Moreover, their varying religious beliefs could not prevent their adoption and diffusion of innovative farm technologies.

The marital status of respondents were single (28.33%), married (51.67%), separated (6.67%) and widowed (13.33%). The married category were the main category (51.67%). The married status could encourage the use of household members as cheap family labour to the respondents.

The educational status of respondents were; no formal education (36.67%), primary (30.00%), secondary (20.00%) and tertiary (13.33%). Thus, few of the respondents had tertiary education. It implies that that their low educational attainment could lead to their poor adoption on improved farming technologies.

The household size of respondents were; 3 (6.67%), 4-6 (64.16%) and > 6 (29.17%). The 4-6 individuals category was the main category (64.16%) and the mean household size was 6 individuals. This implies that the respondents have very moderate household members that were depending on them. This could reduce the diversion of resources that is meant for farming to household up keeps.

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The years of schooling of respondents were < 4 (36.67%), 4-6 (30.00%) and > 6 (35.33%). The mean years of schooling of respondents was 5.72 years. This implies that most of the respondents finished primary school. Education could improve adoption of improved farming.

The years of farming experience of respondents were < 6 years (15.00%), 6-12 years (28.33%) and > 12 years (56.67%). The mean years of schooling of respondents was 17.65 years. This implies that most of the respondents have long years of farming experience. High farming experience could improve adoption of improved farming technologies in the study area.

Table 1: Socio-economic characteristics of farmers

Characteristics	Frequency	Percentage
Gender		
Male	70	58.33
Female	50	41.67
Age (years)		
<40	34	28.33
40−50	69	57.50
> 50	17	14.17
Mean = 42.43		
Religion		
Christianity	69	57.50
Islamic	51	42.50
Traditional	0	0.00
Marital Status		
Single	34	28.33

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Married	62	51.67
Separated	8	6.67
Widowed	16	13.33
Educational Status		
No formal Education	44	36.67
Primary	36	30.00
Secondary	24	20.00
Tertiary	16	13.33

Source: Field Survey, 2026.

Table 1: Socio-economic characteristics of farmers (Cont.)

Characteristics	Frequency	Percentage
Household size		
3	8	6.67
4-6	77	64.16
> 6	35	29.17
Mean = 6		
Years of schooling		
< 4	44	36.67
4-6	35	30.00
> 6	40	33.33
Mean = 5.72		
Years of farming experience		
< 6	18	15.00
6 – 12	34	28.33

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> 12	68	56.67
Mean = 17.65		

Source: Field Survey, 2026.

Improved farm technology adoption status

Table 2 presented the improved farm technology adoption status of respondents. The improved farm technology adoption status includes; yes (35.83%) and no (64.17%). This finding shows that the farmers had poor adoption of improved farm technology in the study area. It implies that most of the farmers may not be adequately sensitize on the need to adopt the improved farming technologies.

Table 2: Improved farm technology adoption status

Status	Frequency	Percentage
Yes	43	35.83
No	77	64.17

Source: Field Survey, 2026.

Communication channels

Table 3 presented the communication channels in the study area. The communication channels of respondents includes; radio (79.17%), field trip (35.83%), agricultural show (45.00%), demonstration (21.67%) and television (28.33%). The findings of this study shows that the respondents had poor demonstration experience. This implies that their production could be reduced due to their poor practical training experience.

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Table 3: Communication channels

Channels	Frequency	Percentage
Radio		
Yes	95	79.17
No	25	20.83
Field trip		
Yes	43	35.83
No	77	64.17
Agricultural show		
Yes	54	45.00
No	66	55.00
Demonstration		
Yes	26	21.67
No	94	78.33
Television		
Yes	34	28.33
No	86	71.67

Source: Field Survey, 2026.

Test of Formulated Hypothesis

Table 4: Relationship between the improved farm technology adoption status and communication channels

Dependent variable	Independent variables	Coefficient	P>|t|
Improved farm technology adoption status			
	Radio	0.198	0.027

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	Field days	0.904	0.000
	Agricultural show	0.038	0.583
	Demonstration	-0.305	0.004
	Television	-0.260	0.001
	Constant	-1.67E-16	1.000

Source: Field Survey, 2026.

In Table 5, relationship between the improved farm technology adoption status and communication channels was presented. The first null hypothesis stated that there is no significant relationship between the improved farm technology adoption status and communication channels. The coefficients of radio and field days were positive and significant at 5 percentage and 1 percentage levels of relationship respectively with improved farm technology adoption status. However, the coefficients of demonstration and television were negative and significant at 1 percentage level of relationship with improved farm technology adoption status. Therefore, the null hypothesis which stated that there is no significant relationship between the improved farm technology adoption status and communication channels was rejected.

4. CONCLUSIONS AND RECOMMENDATIONS

The farmers had poor adoption of improved farm technology and they had poor demonstration experience. Therefore, extension agents should intensify efforts towards sensitizing farmers on improved farm technologies and engage them more on demonstrations.

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