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# ASSESSMENT OF THE EFFECTIVENESS OF INSTITUTE OF AGRICULTURAL RESEARCH AND TRAINING (IAR & T) COMMUNICATION CHANNELS AMONG FARMERS IN ORIRE LOCAL GOVERNMENT, OYO STATE, NIGERIA

*Amusat Adeniyi Suraju[1] and Omirin Tope Isaac[2]
[1]Institute of Agricultural Research and Training, Obafemi Awolowo University, PMB 5029 Moor Plantation, Ibadan
[2]Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Ibadan, Nigeria

## ABSTRACT

The adoption of any disseminated agricultural technology ultimately depends on the effectiveness of the communication channels used. Hence, this study investigated the effectiveness of Institute of Agricultural Research and Training (IAR&T) Communication Channels among farmers in Orire Local Government, Oyo State. Multi-stage sampling method was used for this study. Purposive sampling technique was initially used to select Oniyo village among the Institute's adopted villages across Southwestern Nigeria. Thereafter, all 75 farmers in the village were purposively sampled. Descriptive and inferential analyses showed that the respondents were aged 47.9±8.5 years, female (58.8%), married (77.1%), with 61.4% having family sizes of 4-6 persons. Apart from radio (100.0%), interpersonal communication (97.5%) and farmers/extension guide (80.0%) being the most accessible communication channels, farmers equally had ease obtaining feedback from them: radio ($\bar{x}$ = 1.50), interpersonal communication ($\bar{x}$ = 1.39) and farmers/extension guide ($\bar{x}$ = 0.80). Radio ($\bar{x}$ = 1.51) and interpersonal communication ($\bar{x}$ = 1.41) were observed to be the most effective communication channels to farmers, however farmers were constrained by lack of electricity supply ($\bar{x}$ = 1.04) and lack of access to internet ($\bar{x}$ = 0.73). Access to communication channels (r = 0.402, p = 0.001) and ease of feedback (r = 0.952, p = 0.000) were significantly related to effectiveness of IAR&T communication channels. Communication channels that are more effective to farmers should be used to disseminate agricultural technologies.

**Keywords**: Oniyo village, agricultural technology, multi-stage sampling, information, feedback.

## INTRODUCTION

The agricultural sector is crucial to Nigeria's economy. This submission is underscored by the fact that agriculture forms a proportion of the Gross Domestic Product (GDP) of Nigeria. After oil, agriculture is the largest contributor to the GDP (National Bureau of Statistics, 2014). It serves as a source of livelihood for the greater part of people residing in rural areas. Food production in the country is primarily in the hands of small-scale producers who need information on latest farming practices in order to scale up production. Information is the key factor in the advancement of countries, populations and individuals (Nagamani and Veni, 2016). Access to information and the creation of knowledge are key drivers of social and economic transformation (Manfre and Nordehn, 2013).

The nexus between agriculture and information is robust. Humans have always sought information from their neighbours since they started engaging in crop cultivation and rearing of animals. Information is a critical factor in agriculture that has always mattered, and even though farmers may have undertaken the same activities for years, decades or even centuries, producers have not always found it easy to obtain answers when conditions for them have changed (World Bank, 2011). Agricultural information can serve to bridge knowledge gaps in agriculture, just as Kabir *et al*., (2014) stated that information is useful for farmers covering up their inadequacies in knowledge of certain basic practices that may include technical, marketing, social, and legal agricultural information. Likewise, latest information and knowledge fuel innovation and increase productivity and competitiveness (Manfre and Nordehn, 2013).

Information is needed by farmers as it relates to on-farm and off-farm activities. Categories of information needed at certain instances during the agricultural cycle such as planning, planting, produce storage and marketing are needed by farmers (Jadhav *et al*., 2011). With the passage of time, different agricultural technologies have been developed for the welfare of the farmers but a few of

*Corresponding author e-mail: niyiamusat2000@yahoo.co.uk

them are found at farmer's field overtime. It is very important to disseminate useful agricultural information to the farmers for growing crops sustainably (Kabir *et al*., 2014). For appropriate and relevant information to get to them there is need for them to have access to available communication channels.

An information channel is a method of transmitting information in a specific, one-way flow, for example from sources to users or from users to sources (Martini *et al*., 2016). In the communication of agricultural information to the farmers, the use of variety of communication channels is useful. Some of the communication channels used in disseminating agricultural information include personal contacts, radio broadcasts, publications, field days, agricultural shows, demonstrations etc. Bearing in mind that activities to be carried out on the farm are time bound, information meant for farmers must be made available on time for it to have the expected impact (e.g. change in the behaviour). Making use of the appropriate information channel is also crucial for the message to be embraced by the targeted audience.

The ultimate goal of any agricultural research institute is to ensure self-sufficiency in food and industrial raw materials production within its geographical coverage area. Availability of food depends on availability of appropriate technologies generated by research and propagated by extension agencies to increase the productivity of Agriculture with emphasis on increased food supply for the teeming population. The rationale for any research Institute is to make sure that its technologies are widely spread and adopted within the ecological zone of its coverage area. The Institute of Agricultural Research and Training is a frontline Agrobased research Institute under Agricultural Research Council of Nigeria .In the quest to get the generated technologies to farmers, the Agricultural Research Council of Nigeria (ARCN) in the 90s mandated research institutes nationwide to adopt villages and subsequently the Institute of Agricultural Research and Training (IAR&T) ADOPTED Oniyo village in Orire Local Government of Oyo State, Nigeria as a village where adaptive research will be carried out and technologies generated therein and from other Institute's research stations would be disseminated to farmers within the village for adoption.

There is no gain saying that farmers within and around Oniyo community have been receiving technologies from IAR&T through diverse channels such as interpersonal, radio program (Agbe Asejere), farmers' guide, etc. Obviously, the success or otherwise of the adopted village policy of the Agricultural Research Council of Nigeria particularly IAR&T rested on the effectiveness of the communication channels as they serve as the transferred vehicles of the different agricultural technologies generated. It is an incontrovertible fact that huge funds are being expended on the process of technology generation and dissemination across hundreds of adopted villages in the country, if the communication channels employed to reach the target (farmers) are not effective, colossal wastes would be recorded. Hence, this study sought to assess the effectiveness of IAR&T communication channels among farmers in Oniyo Community. The specific objectives were to:

1. describe farmers' personal characteristics;
2. examine farmers' access to IAR&T communication channels;
3. ascertain farmers' ease of obtaining feedback from IAR&T communication channels;
4. examine the effectiveness of IAR&T communication channels;
5. identify farmers' constraints to accessing IAR&T communication channels

The hypotheses were:

1. There is no significant relationship between accessibility and effectiveness of IAR&T communication channels
2. There is no significant relationship between ease of obtaining feedback and effectiveness of IAR&T communication channels

## MATERIALS AND METHODS

The study was carried out at Oniyo village, Orire Local Government Area of Oyo State. Oniyo village is a complete agrarian community under Ogbomosho Agricultural Zone of the State. Farmers in the community grow maize, cassava, cowpea, Soybean, yam, vegetables and they also involve in livestock farming. Oniyo village was purposively selected because it is the oldest of all the IAR&T adopted villages and the only adopted village with resident personnel whose task is to disseminate the Institute's technologies to farmers within the community. All the 75 registered farmers within the community were purposively sampled because all of them have been exposed to technologies from the Institute through different communication channels. Data was collected using structured questionnaire while descriptive and inferential statistics were used in analyzing and interpreting the data. The study variables were measured as follows:

- ***Personal characteristics:*** Variables under this were age, sex, education, marital status, family size, farm type, farm scale, labour type and farming experience. These were measured in and interval levels.
- ***Access to available IAR&T communication channels:*** This was measured using an ordinal scale. Farmers signified if they had access (1) or no access (0) to a list of 8 channels. Highest score obtainable was 8 and lowest score was 0. The percentage scores were obtained and used to rate the channels on the basis of their access to farmers.

- ***Ease of obtaining feedback from IAR&T communication channels:*** The list of communication channels were presented to farmers wherein they were asked to indicate if it was very easy (2), easy (1) or not easy (0) to obtain feedback from them. Highest score obtainable was 16 and lowest score was 0. Mean scores were generated for each of the channels and used to rank them according to the ease of getting feedback the channels.
- ***Effectiveness of IAR&T communication channels:*** From the list of communication channels, farmers signified if such channels were very effective (2), effective (1) or not effective (0) in disseminating information to them. Highest score obtainable was 16 and lowest score was 0. Mean scores were generated for each of the channels and used to rank them according to the extent of their effectiveness.
- ***Constraints to accessing IAR&T communication channels:*** Farmers were presented a list of 7 constraining items, using a scale of serious constraint (2), mild constraint (1) and not a constraint (0). Highest score obtainable was 14 and lowest score was 0. In order to determine the severity of the listed constraints, their mean scores were obtained and used to rank them.

## RESULTS AND DISCUSSION

### *Personal characteristics of farmers*

The personal characteristics of the farmers are presented in Table 1. The age of majority (48.6%) of the farmers ranged within 41 to 50 years, this in line with the average age of 47.9±8.5 years. The average age signifies that most of the farmers are of middle age and would hence be active enough to explore different communication channels in search of agricultural information that can be used to improve their production activities. It was observed that 58.8% of the respondents were female as against 41.2% male. This indicates higher visibility of women than men, which can be linked to the value addition or processing aspect of the programme. Usually, women are known to be more involved in specialized agricultural activities such as production of day-old chicks, slaughtering and processing of produce (Patil and Babus, 2018). Education is germane to determining farmers' access to information channels and eventual use of such information. As seen in the table 1, 44.3% and 27.1% had secondary and primary education, respectively, while 2.9% had no formal education. Literate farmers would not only have access to more informal channels, but would be more receptive to new agricultural technologies than illiterate farmers. This is in congruent with Tijjani *et al*. (2017), who noted that farmers with formal education tend to be more receptive to agricultural innovations compared to illiterate farmers.

Majority (77.1%) were married, with most (61.4%) having a family size of 4 – 6 persons, in line with the average family size of 5.4±2.1 individuals that can help to provide family labour. This informed the finding of why most (57.1%) of them utilised family labour for their agricultural activities. Mixed farming (51.4%) and crop farming (42.9%) were common among the respondents, with the size of their enterprise being mostly medium scale (70.0%). The average farming experience was 21.3±7.4 years, implying that the respondents possessed a wealth of ideas in their respective agricultural enterprises. Experience of farmers in any agricultural enterprise can enhance their level of productivity (Alabi and Abdulazeez, 2018).

Table 1. Personal characteristics of respondents.

| Variable | Percentage | Mean |
|---|---|---|
| **Age** | | |
| ≤ 30 | 4.3 | 47.9±8.5 |
| 31 – 40 | 11.4 | |
| 41 – 50 | 48.6 | |
| 51 – 60 | 28.6 | |
| > 60 | 7.1 | |
| **Sex** | | |
| Male | 41.2 | |
| Female | 58.8 | |
| **Education** | | |
| No formal | 2.9 | |
| Primary | 52.8 | |
| Secondary | 44.3 | |
| **Marital status** | | |
| Single | 4.3 | |
| Married | 77.1 | |
| Divorced | 1.4 | |
| Widowed | 17.1 | |
| **Family size** | | |
| 1 – 3 | 15.7 | 5.4±2.1 |
| 4 – 6 | 61.4 | |
| 7 – 9 | 18.6 | |
| ≥ 10 | 4.3 | |
| **Farm type** | | |
| Crops | 42.9 | |
| Livestock | 4.3 | |
| Mixed farming | 51.4 | |
| Processing | 1.4 | |
| **Farm scale** | | |
| Small | 0.0 | |
| Medium | 70.0 | |
| Large | 30.0 | |
| **Labour type** | | |
| Family | 57.1 | |
| Hired | 42.9 | |
| **Faming experience** | | |
| ≤ 10 | 2.9 | 21.3±7.4 |
| 11 – 20 | 47.1 | |
| 21 – 30 | 40.0 | |
| 31 – 40 | 7.1 | |
| > 40 | 2.9 | |

Source: Field survey, 2022.

***Accessibility of IAR&T communication channels***

Results in Table 2 demonstrate that of all the communication channels used by the Institute, radio (100.0%) was overwhelmingly the most accessible channel of agricultural information as reckoned by all of the respondents. This hinges on the fact that farmers can concurrently listen to agricultural programmes aired on radio anywhere while at the same time perform their tasks on the farm. It partly explains why radio is considered as the most influential and inexpensive means of acquiring valuable agricultural information (Braimok, 2017). Farmers/extension guide (97.5%), interpersonal communication (80.0%) and posters (64.3%) were other communication channels that were available to the respondents. Farmers/extension guide appears in form of a booklet containing information on how certain farm practices are carried out. It is meant to guide or train farmers on sustainable production and management practices. Regarding interpersonal channels, farmers engage in one-on-one discussion with the extension personnel by talking and interacting with them, thereby strengthening their information networks. Posters (64.3%) are print media which are quite useful for communicating vital or important information (FAO, 2019).

Table 2. Farmers' access to IAR&T communication channels.

| Communication channels | Accessible (%) |
|---|---|
| IAR&T radio programme | 100.0 |
| Farmers/extension guide | 80.0 |
| Posters | 64.3 |
| Interpersonal communication | 97.5 |
| Mobile phones | 0.0 |
| IAR&T Television programme | 1.4 |
| Handbills | 2.9 |
| Internet/ IAR&T website | 0.0 |

Source: Field survey, 2022.

***Ease of obtaining feedback from IAR&T communication channels***

Without appropriate and accurate feedback, a communication process is considered incomplete. Feedback refers to the act of conveying a level of meaningful responses from the receiver of a message (audience) back to the sender of the message (communicator) (FAO, 2019). As presented in Table 3, it can be observed that ease of obtaining feedback from the communication channels aligns in order of their accessibility: IAR&T radio programme ($\bar{x}$=1.50), interpersonal communication ($\bar{x}$=1.39), farmers/extension guide ($\bar{x}$=0.80) and posters ($\bar{x}$=0.71). This implies that these channels are handy to the farmers in letting the communicators of agricultural messages know what has transpired once such messages were received by the farmers. This finding also suggests that the identified information channels are flexible in certain communication circumstances, and they affect the extent of required changes in farmers' behaviour (FAO, 2019). However, farmers' incapability to ask questions and receive prompt feedback has been found to be the main barrier confronting their quest to acquire information through different channels (Ogola, 2015).

Table 3. Farmers' ease of obtaining feedback from communication channels.

| Communication channels | Mean | Rank |
|---|---|---|
| IAR&T radio programme | 1.50 | 1st |
| Farmers/extension guide | 0.80 | 3rd |
| Posters | 0.71 | 4th |
| Interpersonal | 1.39 | 2nd |
| Mobile phones | 0.00 | 7th |
| IAR&T Television programme | 0.01 | 6th |
| Handbills | 0.04 | 5th |
| Internet/ IAR&T website | 0.00 | 7th |

Source: Field survey, 2022.

***Effectiveness of IAR&T communication channels***

The effectiveness of the communication channels was found to be in line with the pattern of their accessibility and ease of obtaining feedback from them: IAR&T radio programme ($\bar{x}$=1.51), interpersonal ($\bar{x}$=1.41), farmers/ extension guide ($\bar{x}$=0.79) and posters ($\bar{x}$=0.69). However, IAR&T radio programme and interpersonal were the more effective communication channels, given that their mean scores were above one. Collectively, it can be said that these channels met most of the information needs of the farmers and relevant in solving local problems compared to others. These channels possess certain characteristics that make them effective in the transmission of agricultural information. For instance, the effectiveness of radio is connected with low cost, wide coverage, use of vernacular language and low maintenance cost (Oyekale, 2015), coupled with the fact that the Institute has her own radio programme (agbeasejere) transmitted weekly through a particular radio station known to the farmers. Primarily, with respect to information on latest agricultural practices, extension is considered as the most trusted channel (Manfre and Nordehn, 2013). To validate any information received from other channels, farmers usually do so from extension agents. Posters, being a low word content information channel, are development tools commonly used in Africa to reach farmers that are not literate (Jost, 2013) see Table 4.

Table 4. Effectiveness of communication channels.

| Communication channels | Mean | Rank |
|---|---|---|
| IAR&T radio programme | 1.51 | 1st |
| Farmers/extension guide | 0.79 | 3rd |
| Posters | 0.69 | 4th |
| Interpersonal communication | 1.41 | 2nd |
| Mobile phones | 0.01 | 6th |
| IAR&T Television programme | 0.01 | 6th |
| Handbills | 0.06 | 5th |
| Internet/ IAR&T website | 0.01 | 6th |

Source: Field survey, 2022.

***Constraints to accessing information from IAR&T communication channels***

Lack of electric supply ($\bar{x}$=1.04) and lack of access to internet ($\bar{x}$=0.73) were the major problems limiting the respondents' access of information from the available communication channels (Table 5). In the developing countries, especially in Africa, the issue of electricity is a barrier to getting information through the use of communication tools such as television, computers and mobile phones. Given that these devices depend on electricity for their operation, frequent power cuts hinder their use. Television, for instance, requires steady supply of electricity, while mobile phones and computers require electricity for their batteries to be charged. Tijjani *et al*. (2017) similarly observed that the absence or erratic supply of power limits the use of certain devices that need electricity for their use.

The internet is not viewed as a possible information source by farmers (Manfre and Nordehn, 2013), due to associated costs, poor connectivity and literacy level. Most farmers cannot access the internet as they do not have smartphones or computers. In most rural communities, internet connectivity is poor and expensive (Sharma and Maheshwari, 2015). Absence of competent professionals to develop learning content (Vijayoragavam, 2006) further compounds the issue.

Table 5. Constraints to accessing information from IAR&T communication channels.

| Constraints | Mean | Rank |
|---|---|---|
| Poor use of local/indigenous language | 0.00 | 5th |
| Bad radio signal | 0.00 | 5th |
| Lack of electric supply | 1.04 | 1st |
| Inadequate literacy level | 0.03 | 3rd |
| Lack of access to communication channels | 0.03 | 3rd |
| Irregular visits by IAR&T personnel | 0.00 | 5th |
| Lack of access to internet | 0.73 | 2nd |

Source: Field survey, 2022.

***Relationships between accessibility of communication channels, ease of obtaining feedback and effectiveness of IAR&T communication channels***

As presented in Table 6 significant relationships existed between access to communication channels (r=0.402, p=0.001), ease of obtaining feedback (r=0.952, p=0.000) and effectiveness of IAR&T communication channels.

Farmers' access to available communication channels is a key determinant of the effectiveness of such channels. Given that latest information and knowledge stimulate agricultural innovation as well as boost productivity (Manfre and Nordehn, 2013), access to communication channels in order to benefit from the message they convey becomes crucial. As mentioned earlier, a communication process is considered incomplete without appropriate and accurate feedback. Information channels that allow feedback are deemed effective, since farmers are permitted to ask questions and make clarifications of the message being conveyed by such channels. However, farmers' incapability to ask questions and receive prompt feedback have been found to be the main barrier confronting their quest to acquire information through different channels (Ogola, 2015) see Table 6.

Table 6. Correlation analyses between accessibility of information channels, ease of obtaining feedback and effectiveness of IAR&T communication channels.

| Variable | r – value | p - value |
|---|---|---|
| Accessibility | 0.402* | 0.001 |
| Feedback | 0.952* | 0.000 |

Source: Field survey, 2022. *$P \leq 0.05$*

## CONCLUSION AND RECOMMENDATIONS

Communication channels such as radio, interpersonal channel, farmers/extension guide and posters in that order were the most effective channels, given the fact that farmers found them more accessible and easier to obtain feedback from. Collectively, the information channels met most of the information needs of the farmers and were relevant in solving their problems compared to others. However, poor supply of electricity and lack of access to internet were limiting factors to accessing information from the communication channels. To engender a more effective communication process, implications abound for IAR&T to consolidate efforts on conveying agricultural innovation through information channels that are not just accessible to farmers, but which they also find easier obtaining feedback from.

## REFERENCE

Alabi, OO. and Abdulazeez, I. 2018. Economics of maize (Zea mays) production in Igabi local government area, Kaduna state, Nigeria. Gaziosmanpaşa Üniversitesi Ziraat Fakültesi Dergisi. 35(3):248-257.

Braimok, T. 2017. Exploring the opportunities and challenges of ICTs for women farmers in Kenya. Master's Thesis Department of Urban and Rural Development, Faculty of Natural Resources and Agricultural Sciences, Swedish University of Agricultural Sciences.

FAO. 2019. Agricultural Extension Manual. Eds. Khalid SMN and Sherzad S Apia.

Jadhav, A., Pshenichnaya, N. and Smith, F. 2011. Agricultural value added services (Agri VAS): Market Entry Toolkit. GSMA.

Jost, C. 2013. Delivery models for climate information in East and West Africa. CCAFS Working Paper no. X. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen, Denmark.

Kabir, KH., Roy, D., Sarker, A., Kuri, SK. 2014. Information Seeking Behavior of the Farmers to Ensure Sustainable Agriculture. European Academic Research. 2(3):3723-3734.

Manfre, C. and Nordehn, C. 2013. Exploring the Promise of Information and Communication Technologies for Women Farmers in Kenya. MEAS Case Study Number 4.

Martini, E., Paramita, E. and Roshetko, JM. 2016. Agroforestry and forestry in Sulawesi series: information channels for disseminating innovative agroforestry practices to villages in southern Sulawesi, Indonesia. Working Paper 224. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. DOI: http://dx.doi.org/10.5716/WP16034.PDF.

Nagamani, ST. and Veni, GK. 2016. ICTs for the empowerment of rural women: a review. International Journal of Computer Science and Technology. 7(2):166.

National Bureau of Statistics. 2014. Nigerian gross domestic product report quarter one 2014. Retrieved fromhttp://www.nigerianstat.gov.ng/download/221.

Ogola, PA. 2015. Assessing communication channels and the impact of agricultural information used by farmers in watermelon production in Yimbo east ward, Siaya county. MSc Thesis in the School of Journalism and Mass Communication, University of Nairobi, Kenya.

Oyekale, AS. 2015. Factors explaining farm households' access to and utilization of extreme climate forecasts in sub-saharan Africa (SSA). Environ. Econ. 6(1):91-103.

Patil, B. and Babus, S. 2018. Role of women in agriculture. International Journal of Applied Research. 4(12):109-114.

Sharma, S. and Maheshwari, S. 2015. Use of ICT by farm women: a step towards empowerment. Indian Res. J. Ext. Edu. 15(3):60-65.

Tijjani, AR., Anaeto, FC. and Emerhirhi, E. 2017. Analysis of the roles of information and communications technologies in rural women farmers' empowerment in Rivers state, Nigeria. Library Philosophy and Practice (e-journal). 1498.

Vijayaragavan, K. 2006. Experiences of computer assisted and programmed instructor (CAI): implication for agriculture extension. International Conference on Social Science Perspectives in Agriculture Research and Development, New Delhi: 218.

World Bank. 2011. ICT in Agriculture Connecting Smallholders to Knowledge, Networks and Institutions. Washington, DC., USA.

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