



## Challenges of smallholder farmers in accessing agricultural information in Southern Ethiopia

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**Abstract:** *The study was focused on identifying sources of agricultural information and analyzing challenges faced by smallholder farmers in accessing agricultural information in Southern Ethiopia. To achieve the stated objectives the study district was selected purposively from Wolaita zone by selecting five kebeles randomly. At the end, a total of 150 sample households were randomly selected from these five kebeles. To collect the data both primary and secondary sources were used for the purpose of this study. Primary data were collected directly from sample respondents through structured and semi-structured interview schedules, observation and focus group discussions. Secondary data were collected from Woreda agriculture and rural development office report, and other relevant books, journal articles and the Internet. After the relevant data were collected, the descriptive statistics such as mean, frequency, and percentage, and the inferential statistics such as chi-square tests were also used. The findings indicate that female farmers, illiteracy, location of market center, information seeking behavior of farmers, low rate of extension-farmers linkages, inadequate operational skill of aids, language barriers, lack of training, lack of rural electrification, lack of development agents, absence of rural networks, inadequate reading materials, and inappropriate time of broadcasting are the main challenges smallholder farmers were faced with. Therefore, to overcome the challenges strong commitment and reformation should be done in the study area by the concerned stakeholders.*

**Keywords:** agricultural information, respondents, behavior of farmers, challenges, descriptive statistics

### Introduction

The backbone of the Sub-Saharan Africa countries is agricultural sector and it maintains food security, generating employment opportunities, source of foreign exchanges and provides raw materials for industries (World Bank, 2014). Agriculture is also the source of rural livelihoods in some African countries (Mwangi and Kariuki, 2015). Agriculture is the key sector for the development of one country by reducing poverty, improving household food security and sustaining rural development (Francisca et al., 2018). Though agriculture is very important for the rural people's livelihoods for the majority of African countries, the sector is still barren and as a result people are in food insecurity and food import dependent (Verdier-Chouhare and Karaguezian, 2016). This is due to many factors one of which is access to agricultural information. Moreover, information is very decisive having critical place and an important commodity by itself for the economic development of one country and a reason for the success of everyday life of people (Odini, 2014). Nzonzo and Mogambi (2016) suggested that information is used as an input for the development of agricultural sector and plays a central role for rural farmers and it is also responsible for answering any incoming opportunities. The way information reaches the farmers is

through dissemination of knowledge and information in mirror image of technology that provides market information to get the most out of agricultural productivity (Asenso-Okyere and Mekonnen, 2012). This indicates that agricultural information links rural farmers with market issues so that rural livelihoods, food security and national economies of the country could be improved (Masuki et al., 2010).

All the same time, farmers in rural areas need to get information at digital age (Francisca et al., 2018). Thus, information communication technologies are the best option to accelerate giving out information among smallholder farmers and it facilitates the rural development by bringing the social and economic changes (Nyamba and Mlozi, 2012). Currently, almost all activities across the world are ICT-dependent and extension is looking for the best way to support billions of farmers worldwide through provision of information, technologies, advising and empowering them (Kwadwo and Daniel, 2012). Although information is important for the life of people, its value is dependent on accessibility, relevance, accuracy and currency (Heeks and Molla, 2009).

Most African countries have not given much attention to link their rural farmers with access to information (Daniel and Hezron, 2016). As a result, African agricultural productivity is very low because of lack of technology and spread of market

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information (Kwadwo and Daniel, 2012). Okello et al. (2014) argued that those farmers who lack access to ICTs are facing the experience of digital poverty, risks and transaction costs and, finally, it leads to the inability to participate in markets and become poor innovative. Increasing low literacy rates, inadequate infrastructure, poor ICT policies and project based development initiatives hinder the diffusion of information (Angello, 2015).

Regarding Ethiopia, information communication technology application is among the lowest in the world despite the current reassuring infrastructural development. For instance, the country is at the rank of 154 from a total of 159 countries in the world (ITU, 2010). This shows the essentiality of building the basic ICT infrastructure to the rural smallholder farmers. At present, there are some parts of Ethiopia where people live without Information and communication technology (ICT) because of lack of infrastructures, inadequate human resources, and lack of experts in ICT. Therefore, this study was intended to investigate the factors influencing access to agricultural information among smallholder farmers in southern Ethiopia.

## Material and methods

The study was conducted in southern Ethiopia particularly in Boloso Sore district in Wolaita zone by taking five kebeles as sample unit. An important decision that has to be taken while selecting a sampling technique is about the size of the sample. An appropriate sample size depends on various factors relating to the subject under investigation like the time aspect, the cost aspect, the degree of accuracy desired, etc. If the sample size is too small, the study will fail to achieve the objectives of analysis. But if the sample size is very large, the study will waste resources while dealing with the sample. So, the appropriate sample size was selected based on determining factors and levels of accuracy required. In this regard, 150 sample households were selected purposefully, especially based on access to infrastructures such as road, health service, and market centers.

To elicit the necessary information for a given study, first we should determine the type of data that needs to be gathered and the source from which the data is to be collected. Both qualitative and quantitative data from both primary and secondary sources were collected to answer the research questions, and objectives of the study. The primary data sources were collected from farmers, as well as newspaper providers, and other subject matter specialists on various aspects of access to agricultural information by farmers. The primary quantitative data were collected from the respondents using a pre-tested, structured interview schedule by well-trained enumerators, closely supervised by the researchers.

The primary data collection method included structured interview schedule with open-ended and close-ended questions. Restructuring had been done using a sufficient number of non-sample respondents through a pilot study in order to suitably

modify the questionnaire and facilitate smooth administration. Secondary quantitative data were collected through personal interviews and reviewing secondary data documents from sources such as reports, and documents from districts by enumerators and researcher and previous research results by researcher. Secondary data sources were documents, reports from different organizations, and other related institutions/organizations. Qualitative data were collected through discussion with focus groups and key-informants, field visits, and observations, this served as a supplement to quantitative data. Focus group discussion was held on specific topics with small groups of people that consisted of 10 farmers who have intimate knowledge about the topic under consideration. A checklist with key questions had been used to spark out the discussion to obtain qualitative data from focused-group members, Key-informants, the officials and other functionaries. To analyze the collected data, descriptive methods such as mean, percentage, t-test, and Chi-square test, and standard deviation were used to explain demographic, economic and institutional factors. Chi-square test was used to test the relationship between farmers' access to agricultural information (dependent variable) and explanatory variables (independent variables).

## Results and discussion

### *Sources of agricultural information*

This part of the study deals with the analytical result from descriptive statistics. The analysis was made in light with the objective of the study. Some facts reveal that farmers make a number of decisions in their daily activities. To identify the determinants behind farmer's decision to access various agricultural information, the assumption was that in a given period at the source of agricultural information a farmer chooses among many alternatives sources that offer the maximum utility. If the farmer maximizes its utility defined agricultural information realizations, then the farmer's choice is simply an optimal access of agricultural information to choose sources that maximize its utility. Likewise, according to a survey made during data collection, farmers were getting agricultural information from four sources. Accordingly, it was identified that farmers 13 (8.7%), 56 (37.30%), 47 (31.30%) and 34 (22.70%) were getting agricultural information from all aids, audio aids, visual aids and audio-visual aids, respectively, from the total of 150 (100%) sample households. It can be summarized that results in the following indicate that the majority of farmers were getting agricultural information from audio aids, however, few of them were through all aids.

### *Challenges of smallholder farmers in accessing agricultural information*

*Sex matters:* According to the response of the respondents during focused group discussion women were tied with household responsibilities so that the information women are getting was the information of household, not from outside. Without equal access

to information, they are at a disadvantage in making informed choices about what to produce and when to sell their products. This implies that male-headed households have better access to agricultural information than female-headed households. Similarly, the results in Table 1 reveal that male farmers (52.0%) were more likely to access agricultural information than female farmers (48.0%). The relationship between sex of household heads and sources of agricultural information is statistically significant at less than 1% probability level. The result is also similar with the findings of (Yahaya, 2001; FAO, 2002; Achia, 2002; Walker, 2002; Materu-Behtsa, 2004).

*Educational level of farmers:* Education matters the agricultural production, productivity and marketing of smallholder farmers, especially for those who are living in rural areas. Literate farmers are earlier adopters of modern technologies than illiterate ones. Farmers who are more highly educated are likely to diversify their information and more likely to use multiple sources of agricultural information. Moreover, lack of education is the primary obstacle to meet information needs in the study context. On the other hand, as education level increases by level of schooling, the probability of household getting information relating to agriculture increases. The results

in Table 2 show that the majority of farmers (38%) were under the category of illiterate and primary education. This implies that the less the educational level of the farmer, the lower the chance to get agricultural information. In this connection Mbozi (2002) and Dutta (2009) stated that education matters smallholder farmers. The relationship between educational status of farmers and sources of agricultural information is statistically significant at less than 5% probability level.

*Location of market center:* Distance of farmer's residence from market area determines where access of agricultural information materials are available to buy or sell. This indicates that farmers residing near to the market would have a chance to get agricultural information contrary to those who live far from market area. This further implies that the more farmers near the market area, the greater the chance to get newspaper to get more accurate agricultural information. The results in Table 3 showed that a significant proportion of the farmers (40%) were not visiting market frequently because the distance between their residence and the market area was too big so they couldn't get agricultural information on time. The relationship between market center and sources of agricultural information is statistically significant at less than 1% probability level.

**Table 1.** The probability of household head getting information

Who do you get more information, female hhs or male hhs?	Sources of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Female	0 (0.0)	27 (18.0)	27 (18.0)	18 (12.0)	72 (48)
Male	13 (8.7)	29 (19.3)	20 (13.3)	16 (10.7)	78 (52)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 14.014, p: 0.003^{***}$

\*Source: Own study (2017); \*\*\*significant at 1 % probability level; values in parentheses are in percent (%)

**Table 2.** Educational status of the farmers

Educational status of farmers	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Illiterate	4 (2.7)	19 (12.7)	24 (16.0)	10 (6.7)	57 (38.0)
Can read and write	6 (4.0)	11 (7.3)	8 (5.3)	4 (2.7)	29 (19.3)
Primary school	2 (1.3)	11 (7.3)	7 (4.7)	13 (8.7)	33 (22.0)
Secondary school	1 (0.7)	15 (10.0)	8 (5.3)	7 (4.7)	31 (20.7)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 17.099, p: 0.047^{**}$

\*Source: Own study (2017); \*\*significant at 5 % probability level; values in parentheses are in percent (%)

**Table 3.** Location of market place

How frequently do you visit the market?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Not at all	12 (8.0)	22 (14.7)	14 (9.3)	12 (8.0)	60 (40.0)
Once per month	1 (0.7)	7 (4.7)	8 (5.3)	9 (6.0)	25 (16.7)
Twice per month	0 (0.0)	19 (12.7)	16 (10.7)	11 (7.3)	46 (30.7)
More than three times per month	0 (0.0)	8 (5.3)	9 (6.0)	2 (1.3)	19 (12.7)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 22.433, p: 0.008^{***}$

\*Source: Own study (2017); \*\*\*significant at 1% probability level; values in parentheses are in percent (%)

*Information seeking behavior.* It can be seen as the farmer's business enterprise to get information. This is also related to the ability of farmers to get any information regarding agricultural information in any circulation. This indicates that when the farmers are highly eager to get information from various sources, they will be more updated with new agricultural information so that they can improve their agricultural production by using new technologies. The results in Table 4 show that from the total of all aid users, audio aid users, visual aid users and audio-visual aid users the majority of farmers (77.9%) rarely, never or sometimes get agricultural information. According to the report obtained from the respondents, the majority of farmers had low rate of seeking agricultural information. The relationship between farmer's behavior of seeking agricultural information and sources of agricultural information is statistically significant at less than 1% probability level.

*Extension-farmers linkages:* This linkage indicates the frequency of extension agents contacting farmers through meeting, research, training and field visits by delivering agricultural information. During survey time most of the time, extension agents are not frequently dedicated to contact farmers due to the imbalance between the number of extension agents and number of households. This is because of lack of human resources, and lack of mass media that transfers information for farmers at the same time. Moreover, because of the limited

number of extension workers, the latter don't reach every farmer, but few farmers. Similarly, the results in Table 5 indicate that the majority of farmers (68.7%) were contacting extension workers once and twice per week. This further indicates that the more extension agents visit farmers, the probability of farmers to update with new information and technology becomes very high, but the result didn't match the argument. The relationship between frequency of extension agents contacting farmers and sources of agricultural information is statistically significant at 10% probability level. This result is similar with the data of Aina (2006) and Bilonk (2008).

*Operational skill of audio aids (Radio):* Though farmers had access to aids on their hand, few of them didn't know how to operate it particularly in rural areas. This shows the ability of farmers to open and listen to radio, TV and other audio-visual aids to get information. Though few information channels were available where farmers were living in rural areas, some of them did not know how to operate and use them. The results in Table 6 show that 40% of the farmers were unable to operate audio aids such as radio so they couldn't get access to agricultural information; however, 60% of them could operate it. The relationship between farmer's operational skill of audio aids and sources of agricultural information is statistically significant at probability level of 10%.

**Table 4.** Information seeking behavior

Rate of seeking information in the agricultural production activities	Source of agricultural information				Total
	All aids users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Never	0 (0.0)	18 (12.0)	9 (6.0)	8 (5.3)	35 (23.3)
Rarely	11 (7.3)	12 (8.0)	10 (6.7)	8 (5.3)	41 (27.3)
Sometimes	2 (1.3)	11 (7.3)	17 (11.3)	11 (7.3)	41 (27.3)
Mostly	0 (0.0)	15 (10.0)	11 (7.3)	7 (4.7)	33 (22.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 29.433, p: 0.001^{***}$

\*Source: Own study (2017); \*\*\*significant at 1% probability level; values in parentheses are in percent (%)

**Table 5.** Frequency of farmers contacting extension agents

Frequency of contacting an extension agent	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Once a week	3 (2.0)	15 (10)	6 (4.0)	9 (6)	33 (22.0)
Twice per week	3 (2.0)	21 (14)	28 (18.7)	18 (12)	70 (46.7)
Three times per week	2 (1.3)	10 (6.7)	6 (4.0)	0 (0)	18 (12.0)
Four and above times per week	5 (3.3)	10 (6.7)	7 (4.7)	7 (4.7)	29 (19.3)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 16.10, p: 0.065^*$

\*Source: Own study (2017); \*significant at 10 % probability level; values in parentheses are in percent (%)

**Table 6.** Farmers' operational skill of audio

Can you operate listen to Audio aids (e.g. Radio)?	Source of Agricultural Information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	3 (2.0)	25 (16.7)	14 (9.3)	18 (12.0)	60 (40.0)
Yes	10 (6.7)	31 (20.7)	33 (22.0)	16 (10.7)	90 (60.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 6.469, p: 0.091^*$

\*Source: Own study (2017); \* significant at 10 % probability level; values in parentheses are in percent (%)

*Operational skill of visual aids (TV):* Though farmers had access to aids on their hand, few of them didn't know how to operate it particularly in rural areas. This shows the ability of farmers to open and listen to radio, TV and other audio-visual aids to get information. Though few information channels were available where farmers were living in rural areas, some of them did not know how to operate and use them. The results in Table 7 show that 56% of the farmers were unable to operate audio-visual aids such as TV so they couldn't get access to agricultural information; however, 44% of them could operate it. The relationship between farmer's operational skill of visual aids and sources of agricultural information is statistically significant at probability level of 5%.

*Language:* language was observed as one constraint in accessing agricultural information. In most developing countries information carriers are alien languages and this language is written in English so a large number of African farmers cannot read or write this language and as a result farmers in rural community are non-users of agricultural information. Information which is written in English language, for example, is not useful to small-scale farmers in Ethiopia,

particularly in rural areas. During survey time, farmers said that they had some access to materials to search information about agricultural issues, but these materials were written in a foreign language, not in their national or local language (wolayitegna), so farmers are deprived from getting the updated information. The results in Table 8 indicate that the majority of farmers were native in the local language, but few of them were speakers of another language. On the other hand, the majority of farmers were unable to get agricultural information since materials were written in other languages. The relationship between language used and sources of agricultural information is statistically significant at 10% probability level.

*Provision of training services:* This indicates how training influences those farmers who participate in training or not and have access to information. The results in Table 9 reveal that there is a significant (p: 0.007) relationship between involvement in training and selection of information sources by the farmers. The chi-square test reveals that farmers' involvement into any type of agricultural information training has statistically significant association with the selection of appropriate sources of agricultural information.

**Table 7.** Farmers' operational skill of audio-visual aids

Can you operate Audio-visual aids (e.g. TV)?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	4 (2.7)	30 (20.0)	34 (22.7)	16 (10.7)	84 (56.0)
Yes	9 (6.0)	26 (17.3)	13 (8.7)	18 (12.0)	66 (44.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.70)	150 (100)

$\chi^2$ : 9.689, p: 0.021\*\*

\*Source: Own study (2017); \*\*significant at 5 % probability level; values in parentheses are in percent (%)

**Table 8.** The influence of language on access to agricultural information

Which language can you use to read agricultural information?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Amharic	1 (0.7)	9 (6.0)	7 (4.7)	7 (4.7)	24 (16.0)
English	2 (1.3)	8 (5.3)	4 (2.7)	4 (2.7)	18 (12.0)
Wolayitegna	8 (5.3)	31 (20.7)	33 (22.0)	22 (14.7)	94 (62.7)
All languages	2 (1.3)	8 (5.3)	3 (2.0)	1 (0.7)	14 (9.3)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2$ : 6.729, p: 0.066\*

\*Source: Own study (2017); \*significant at 10 % probability level; values in parentheses are in percent (%)

**Table 9.** Provision of training

Involved in any training on agricultural information?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	4 (2.7)	44 (29.3)	28 (18.7)	23 (15.3)	99 (66.0)
Yes	9 (6.0)	12 (8.0)	19 (12.7)	11 (7.3)	51 (34.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2$ : 12.040, p: 0.007\*\*\*

\*Source: Own study (2017); \*\*\*significant at 1% probability level; values in parentheses are in percent (%)

*Access to rural electrification:* The results in Table 10 show that access to electricity has statistically significant ( $p: 0.062$ ) relationship with access to sources of agricultural information. However, the majority of rural households responded that they are highly relying on audio aids only. As it was identified during the focus group discussion, audio aids that can be used with portable battery are easier to manage and operate. Moreover, it is economically accessible almost for all social classes.

*Commitment of extension agents:* The data in Table 11 indicate that the rate of the extension agents' commitment to discuss with farmers about the appropriate agricultural information sources has a significant ( $p: 0.006$ ) relationship with the access to agricultural information sources. For many

respondents (44.7%), the rate of extension agent's commitment to communicate with farmers about the sources of agricultural information is rated as medium.

*Access to network:* The results in Table 12 show that access to mobile network has a significant ( $p: 0.010$ ) relationship with the sources of agricultural information. A lot of respondents replied that they are highly dependent on audio aids to access agricultural information. Especially, local radio service is accessible through their mobile phone wherever the mobile network service is distributed. During the focus discussion, focused group unanimously agreed that mobile network service distribution is making rural communication much easier about agricultural information.

**Table 10.** Access to electricity to use electronic media

Access to electricity?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	10 (6.7)	23 (15.3)	26 (17.3)	21 (14.0)	80 (53.3)
Yes	3 (2.0)	33 (22.0)	21 (14.0)	13 (8.7)	70 (46.7)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 7.335, p: 0.062^*$

\*Source: Own study (2017); \* significant at 10% probability level; values in parentheses are in percent (%)

**Table 11.** Rate of contacting extension agent with farmers

Rate of the extension agents' commitment to discuss agricultural information	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Low	4 (2.7)	22 (14.7)	28 (18.7)	8 (5.3)	62 (41.3)
Medium	4 (2.7)	27 (18.0)	15 (10.0)	21 (14.0)	67 (44.7)
High	5 (3.3)	7 (4.70)	4 (2.70)	5 (3.30)	21 (14.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 18.125, p: 0.006^{***}$

\*Source: Own study (2017); \*\*\* significant at 1% probability level; values in parentheses are in percent (%)

**Table 12.** Access to network to use mobile phone/radio

Access to network to use mobile phone?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	9 (6.0)	25 (16.7)	29 (19.3)	27 (18.0)	90 (60.0)
Yes	4 (2.7)	31 (20.7)	18 (12.0)	7 (4.7)	60 (40.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 11.359, p: 0.010^{**}$

\*Source: Own study (2017); \*\* significant at 5% probability level; values in parentheses are in percent (%)

*Access to reading materials:* Table 13 shows that access to adequate reading materials to get agricultural information has also a significant ( $p: 0.003$ ) relationship to sources of agricultural information. However, relatively high number of the respondents replied that they prefer audio aids to visual aids. This was mainly due to the fact that a lot of the respondents had attained lower educational level. Moreover, audio aids can be operated easily as compared to reading poster, flyers and other written sources of information. In addition to the operation skills requirement, information from visual aids is rarely supplied and

it is not easily accessible to the farmer's door as compared to information brought by audio aids.

*Constraints to access market:* According to the response of the respondents constraints such as inability to get information about the market, distance of the market from farmers residence in rural areas and lack of transportation affected farmers negatively so that they couldn't get agricultural information on time, especially to sell agricultural commodities and products. Similarly, the results in Table 14 show that the majority of farmers were suffering from the problem of market imperfection

due to lack of updated information on market price. Moreover, people were using foot-made road which is not suitable for movement. The relationship between constraints to access market and sources of agricultural information is statistically significant at probability level of 10%.

*Attitude towards seeking information:* Pitive attitude towards improving agricultural production is one of the factors that can speed up the farm change process. It is a fact that when new technology as innovation comes to farmers, in order

to accept and implement it farmers may have either positive or negative opinion towards the new incoming information. The data in Table 15 indicate that the majority of the respondents (56.7%) had positive attitudes towards the new incoming agricultural information, but 43.3% had reflected the negative attitude. The relationship between attitude of farmers towards the new incoming of agricultural information and sources of agricultural information are statistically significant at probability level of 5%.

**Table 13.** Access to adequate reading materials to get agricultural information

Access to adequate reading materials to get agricultural information?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	7 (4.7)	41 (27.3)	43 (28.7)	20 (13.3)	111 (74.0)
Yes	6 (4.0)	15 (10.0)	4 (2.7)	14 (9.3)	39 (26.0)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 305, p: 0.003^{***}$

\*Source: Own study (2017); \*\*\*significant at 1% probability level; values in parentheses are in percent (%)

**Table 14.** Constraints to access market information

The main constraints to access markets?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
Unable to get information	1 (0.7)	14 (9.3)	7 (4.7)	9 (6.0)	31 (20.7)
Distance to market	10 (6.7)	20 (13.3)	16 (10.7)	11 (7.3)	57 (38.0)
Lack of transportation	2 (1.3)	22 (14.7)	24 (16.0)	14 (9.3)	62 (41.3)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 11.870, p: 0.065^*$

\*Source: Own study (2017); \*significant at 10 % probability level; values in parentheses are in percent (%)

**Table 15.** Attitude towards the new incoming information

Positive attitudes towards the new incoming agricultural information?	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	2 (1.3)	27 (18.0)	26 (17.3)	10 (6.7)	65 (43.3)
Yes	11 (7.3)	29 (19.3)	21 (14.0)	24 (16.0)	85 (56.7)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 10.112, p: 0.018^{**}$

\*Source: Own study (2017); \*\* significant at 5 % probability level; values in parentheses are in percent (%)

**Table 16.** Time of broadcasting

Suitability of broadcasting time for TV/ Radio program	Source of agricultural information				Total
	All aids Users	Audio aids Users only	Visual aids Users only	Audio-visual aids Users only	
No	3 (2.0)	32 (21.3)	19 (12.7)	22 (14.7)	76 (50.7)
Yes	10 (6.7)	24 (16.0)	28 (18.7)	12 (8.0)	74 (49.3)
Total	13 (8.7)	56 (37.3)	47 (31.3)	34 (22.7)	150 (100)

$\chi^2: 9.552, p: 0.023^{**}$

\*Source: Own study (2017); \*\*significant at 5 % probability level; values in parentheses are in percent (%)

*Time of broadcasting:* Time of broadcasting to listen to radio and television is one of the factors that determine the access of agricultural information in the study area. This indicates the time of farmers to get agricultural information from both printed and non-printed materials (audio-visual aids) from various sources in appropriate programmes. Failure to get agricultural information in a timely manner is another barrier to the process of accessing agricultural information. This is mostly caused by poor information infrastructure so that farmers sometimes get information about the availability of agricultural inputs and equipments when it is too late to apply for it or they do not get the information at all. In another way, farmers cannot get good information from the radio because of poor radio frequencies. Similarly, the results reflect that almost half of the farmers (50.7%) were unable to coincide with time of broadcasting for Radio/TV program so they couldn't access agricultural information in a suitable manner, but the rest of them (49.3%) could do so (Table 16). The relationship between the time of broadcasting and sources of agricultural information is statistically significant at probability level of 5%. For example, tuning is better during the night when farmers are completely exhausted and need to sleep. The poor radio frequencies are very much related to poor information and communication infrastructure. This is also argued by the authors Cogburn and Adeya (2000), Ellen (2003) and Masuki et al. (2010).

## Conclusion

In Ethiopia, access to information, communication and technology (ICT) is often limited especially for people living in rural areas. Though agricultural information in Ethiopia at present is at the early stage of development, the Ethiopian Government has made the development of information technology as one of its strategic plan priorities to boost agricultural production. However, agricultural information application in the country is among the lowest in the world despite the current encouraging infrastructural expansion which is expected to improve the situation. There are parts of Ethiopia where people still live without agricultural information reach ability due to lack of suitable infrastructure, low level of human resource development, and low level of agricultural information literacy, lack of required resources. Another reason for this is that the majority of agricultural information is located in urban areas and those who do have access are often the educated working class. But access among the poor and rural classes is critical for development. Therefore, the government may make reformation on network service, provision of infrastructural facilities, producing the qualified persons who know about the ICT application, setting the appropriate broadcasting time of TV/Radio by considering farmers, providing attitudes, skill and knowledge training, empowering women farmers on how to get information through promoting adult literacy, expansion of rural markets, adjusting suitable environment by translating the aids written in a foreign language into local language, stretching electric power in the villages. Finally, agricultural extension

workers should provide training for farmers on how farmers to adjust their time to follow up Radio/TV and FM program.

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