



Farmers' Access and Utilization of Mass Media Channels for Communicating Agricultural Information in Southern Ethiopia

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Abstract

Mass media serves as a veritable instrument for information dissemination in agriculture. This paper investigated farmers' access to mass media channels and their usage for receiving agricultural information. This study applied mixed research methods. The study involved a proportionate sample of 364 farm households selected using a systematic random sampling technique. A semi-structured interview schedule was administered during June and July of 2020. Descriptive statistics and bivariate analysis were employed for the data analysis. Three focus group discussions with model farmers were held, and the data was thematically analysed. The results indicated that mobile phones, radio, television, and print media were accessed by farmers to receive agricultural information. However, mass media methods have not been extensively used by farmers. The low ownership of media devices, lack of communication infrastructure, low coverage of agricultural programmes, and high levels of illiteracy were attributed to the low access and utilisation of mass media. This study therefore recommends that farmers be encouraged to own mass media outlets such as radio and mobile phones, and that the state extension system (government) and other development organisations work together to improve communication infrastructure such as power supply. The mass media channels should be promoted to increase the number of agricultural programmes they transmit per week and make them more suitable for local contexts.

Keywords:

Mass Media
Information
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Communication
Development

1. Introduction

In agricultural development schemes, information is regarded as one of the most valuable resources, and mass media channels play an essential role in disseminating the information to the rural community (Kaske, 2020). Empirical evidence proved that the majority of rural dwellers in Sub-Saharan Africa continue to live in extreme poverty as a result of the failure to make significant agricultural advances (Castañeda et al., 2018; Bjornlund et al., 2020; Phuong and Ibrahim, 2020). Agricultural development, therefore, becomes a top priority for feeding a rapidly growing population and developing the national economies of the developing states (Campos et al., 2018; Timalina and Pradhan, 2019; Zakariyau, 2020; Oxford Business Group, 2021).

It is worthy of note that the sustainable development goals of ending poverty in all its forms and achieving food security (SDGs 1 and 2) need the increased focus of all actors involved in agricultural development. In the context of developing countries like Ethiopia, where agriculture determines the growth and development of all other sectors, it is essential to provide farmers with the necessary information that could facilitate their agricultural productivity.

In this regard, mass media channels play a crucial role in linking farmers with key providers of extension services. Access to agricultural information and proper use of that information are recognised as important factors in agricultural development. In other words, farmers need to adequately access agricultural information, which makes them major players in the development process.

Despite the development agents' efforts to bridge the information gap through interpersonal ways (Philipos et al., 2014; Kaske, 2020), farmers have continued to utilise the ancient system of production despite the changing ecological and population pressures (Diriba, 2020). Moreover, besides interpersonal methods of communication, it is unclear how the mass media channels have been accessed by the farmers, and their potential for communicating agricultural information has not yet been established in the Wolaita Zone, southern Ethiopia. This could have constrained agricultural information delivery and limited the ability of mass media channels to meet farmers' growing demand for agricultural information. Therefore, understanding the current trend towards farmers' access to and use of mass media channels is useful for state extension systems, development workers, media practitioners, academia, and policymakers.

Objectives of the study

The main objective of this paper is to establish the mass media channels accessed by farmers and how they are being utilised for communicating agricultural information. Specifically, it sets out to:

- Identify the mass media channels accessed by farmers to receive agricultural information in the Wolaita zone, southern Ethiopia.
- Analyse the farmers' usage of mass media channels and their relevance for agricultural productivity in the Wolaita zone, Southern Ethiopia.
- Determine the relationship between personal and situational characteristics of farmers and their utilization of mass media channels.
- Identify the factors influencing the farmers' usage of mass media channels for receiving agricultural information in the Wolaita zone, Southern Ethiopia.

In the milieu of development, communication facilitates the engagement of end-users in development activities, and it is considered an essential thread that binds development initiatives and the local community (Imoh, 2013; McPhail, 2009). According to Adejoh et al., (2014), agricultural communication is a two-way process in which information, thoughts, ideas, feelings, or opinions are shared through words, actions, or signs in order to reach a mutual understanding. Communication stimulates the participation of rural dwellers and motivates them to be engaged in the development process by creating a favourable environment for the transfer of knowledge and information (Mtega, 2018; Kaske, 2020). In this context, communication arises from the perspective of supporting development rather than being a mere strategy to deliver messages from a source to end-users.

Various methods of communication have been used to disseminate agricultural knowledge to farmers. Mass media is one of the methods and is widely accepted as a vehicle for promoting rural development (Timalsina and Pradhan, 2019). The limited coverage of conventional extension methods necessitated the use of mass media methods to communicate extension messages (Okunola, 2015). In order to achieve the desired behavioural change among farmers, agricultural information must reach and be used by them as easily as possible. In another way, information and the channel through which it is communicated to farmers contribute to successful farming (Adejo et al., 2016; Spurk et al., 2014; Kaske, 2020; De Roo et al., 2021).

Mass media channels were found to be a veritable tool for creating awareness, mobilising farmers, and motivating them towards modern, science-based agriculture (Ango et al., 2013). According to Ango et al. (2013), the nature and extent of the use of mass media for mobilising farmers determine the success of agricultural development programmes in developing countries. On the other hand, it is argued that effective agricultural communication should ensure farmers' involvement in development and their participation in the communication process (Adejoh et al., 2014).

Though the role of the mass media in development has been subjected to various speculations, it is agreed among scholars that the mass media is central to any development program. McQuial (1987) contends the media are agents of development and social change, and they have an important role to play in the development process, particularly in developing countries. In the context of developing countries, the media is supposed to support as well as facilitate the efforts of the governments and other development organisations to bring positive behavioural change in society (Asemah et al., 2013; Timalsina and Pradhan, 2019).

Particularly when it comes to the agricultural development schema, the role of the mass media can take several forms. Primarily, the media provide options for farmers to access information, inspire them to adopt new farming practices, and enable them to acquire knowledge that brings about a behavioural change. Despite the sharing of

information, the mass media could also create an enabling environment for farmers to get timely advice and technical assistance from experts at the time of emerging shocks such as floods, diseases, and climate change (Muhammad, 2005; Albarran, 2002).

Another crucial contribution the media make to agricultural development is linking farmers with organisations working on agricultural development endeavours (Muhammad, 2005; Lee, 2020). Mass media links the indigenous agriculture knowledge of the farmers with the modern farming technologies that emerge from researchers and innovators (Inagaki, 2007; Ichplani et al., 2018; Lee, 2020). This enables farmers to grasp new skills that help them practise knowledge-based modern agriculture and make it suitable for local contexts. It also gives them the ability to make informed decisions about their farming, which increases agricultural productivity and strengthens its sustainability (Mtega, 2018).

However, in order to exploit this potential for agricultural development, scholars argue that one needs to understand various aspects of mass media and its channels. For instance, Israel and Wilson (2006) presume an understanding of the nature of the mass media and its communication channels is a prerequisite for the effective communication of the agricultural message to audiences. On the other hand, Baghesta et al., (2010) contend that the availability of the communication channels, the nature of the message being communicated, the feedback mechanism, and the urgency of the messages are crucial for defining the usage of mass media channels.

Recently, it has also become increasingly acknowledged that the availability, suitability, cost, nature of the message, quality of the communication infrastructure, and the farmers' preferences considerably determine the level of usage of communication channels (Abukar et al., 2021). As Cheffo (2016) argues, the form and content of the agricultural messages are supposed to be tailored to the farmers' context to serve their information needs. This indicates that a well-crafted agricultural message conveyed through the farmers' preferred media reinforces the agricultural development schema.

Currently, the mass media channels used by development organisations to communicate with the farming community are dynamic and increasingly diversified. Advancements in technology have brought new communication channels that are either standalone or mediated by devices and are suitable for reaching large audiences at once. For instance, radio, television, internet-based online media, different mobile phone applications, and print media are currently used in agricultural context to communicate agricultural messages to farmers (Livondo et al., 2015; Goggin, 2012).

Information and Communication Technology (ICT) is used as a potential tool for providing farming communities with scientific knowledge and heralds the formation of knowledge societies in rural areas (Okafor and Malizu, 2013). One of the most exciting forms of ICT that allows farmers to interact with potential sources of agricultural information is the mobile phone. Mobile phones can facilitate interactive information flows that cannot be hindered either by space or time, thereby influencing the existing communicative ecologies (Amir et al., 2016). Radio and television are also influential channels of communication, and they can quickly spread information about agricultural-related technology transfer among farmers (Chhachhar et al., 2012).

Radio is one of the broadcast mediums that almost all experts identify as being the most appropriate for rural emancipation programmes (Okwu, 2007). It beats distances and thus has an immediate effect. This is because a radio set is cheap to obtain and is widely owned in rural areas, which makes it a medium that the rural community is familiar with. Radio is believed to be a rurally preferred medium as it transcends the barriers of illiteracy, demanding less intellectual exertion than other forms of media (Okwu, 2007; Danjuma et al., 2021).

Television, like radio, is gaining popularity in communicating agricultural information due to its unique sound and picture qualities that make it ideal for demonstration purposes. Images on television make it easier to explain complex concepts to farmers (Chhachhar et al., 2012). However, empirical evidence proved that in many rural areas, particularly in Third World countries, people have no access to this medium (Langat et al., 2018; Chhachhar et al., 2012; Danjuma et al., 2021). The print media, on the other hand, are also used to convey precise and clear development messages to the rural community on a mass scale. Farmers can use printed material for a long period as a permanent reminder and can use it again and again if the form and content are tailored to their needs and interests (Farooq et al., 2007). On a broad spectrum, the importance of mass media for agricultural development cannot be taken for granted, as media and communication have a potentially broader role in raising the profile of agriculture

2. Methodology

This study was conducted in the Wolaita Zone of southern Ethiopia. The population of this study is farm households residing in the Wolaita Zone. The use of qualitative and quantitative methods allowed the researcher to rigorously investigate the views, attitudes, and practises of key participants involved in communicating extension information. Mixed methods also helped to triangulate the data obtained and the study results.

Multi-stage sampling was used to select the study settings and subjects. First, based on proximity and distance from the centre, three districts: Duguna Fango, Boloso Sore, and Sodo Zuria were purposefully selected. The districts were selected to represent the Wolaita Zone. Within the respective districts, villages were also classified again into three clusters. Thus, nine villages were selected for the study. Based on the list of farm households obtained from the villages' administration, the sample unit (households) per village was determined using proportional to sampling techniques. The systematic sampling method with every 5th value in the list was employed to pick the sample respondents in each village by using Kothari's (2004) formula.

Door-to-door interviews were conducted with a total sample of 364 household heads during June and July of 2020. The interview involved both open-ended and close-ended questions regarding what mass media channels they access and how they use them for improving agricultural production. The Statistical Package for Social Sciences (SPSS) Version 26 was used to analyse the collected data. The data analysis involved descriptive statistics and bivariate analysis (t-test and chi-square test).

On the other hand, purposive sampling was used to identify members for focus group discussions. Three focus group discussions (FGD) were held in the selected three districts of the Wolaita zone, with six to ten model farmers per group. The FGD participants were selected based on their characteristics, such as their agricultural profile, farm experience, past utilisation of extension services, and farm information from key extension service providers. The reasons for selecting model farmers were their function as an instrument in linking other farmers with development organisations (Hailemichael and Haug, 2020) and the regular communication they had with key extension service providers. This could help the researchers gain a more complete picture of how farmers communicate agricultural information and gather their perspectives and experiences. A semi-structured checklist was used to guide the discussion

3. Results and discussion

3.1 Characteristics of respondents

The mean age of the respondents was 45.6 years, and it ranged from 20 to 90 years. The majority of the respondents were within the active labour age range. It was found that 76.4% of respondents were male and 23.6% were female, while the majority (77.3%) of the respondents were married. On the other hand, the average farming experience of the respondents was 28.1 years, while the mean size of farmland owned by them was 0.52 ha. This signifies the scarcity of farmland among the farmers. The results show that more than half (55.2%) of the respondents were illiterate and had attained a low level of education. Language plays a key role in determining the understanding between the sender and receiver of a message. In this regard, a large proportion (55.5%) of the respondents could only understand and speak the local language (Wolayttato) in the study area. This implies that more than half of the respondents were unable to fully comprehend media messages that were broadcast in languages other than the local language (Wolayttato). The findings show the average distance to the farmers' training centre from respondents' residences was 2.44 km, while it was 12.5 km from the immediate urban centres. This shows the respondents travel long distances from their residences to urban centres.

3.2 Farmers' access to mass media channels for receiving agricultural information

The results show that 26.1% of respondents have access to radios and 6.3% of them have access to televisions to receive agricultural information. This indicates that a substantial proportion of farmers are less likely to access radio and television for agricultural information. This might be attributed to the inaccessibility and low ownership of mass media devices by farmers in the Wolaita Zone, Southern Ethiopia.

Table 1. Descriptive Statistics of Continuous Explanatory Variables (n=364)

Variables	Mean	Std.	Min	Max
Age (years)	45.6	12.75	20	90
Farming experience(years)	28.1	12.93	3	70
Land area	0.52	0.41	0	4
Livestock(TLU)	1.8	1.58	0	13
Distance from Farmers' Training Center (km)	2.4	1.19	1	8
Distance to urban (km)	12.5	11.05	0	46

Table 2. Descriptive Statistics of Categorical Variables (n=364)

Variable	Category	Number	Percent
Gender	Male	278	76.4
	Female	86	23.6
Education	Illiterate	201	55.2
	Primary	96	26.4
	Secondary	50	13.7
	Diploma & above	17	4.7
Marital Status	Married	282	77.3
	Single	11	3.0
	Divorced	27	7.4
	Widowed	44	12.1
Language	Wolayttato only	202	55.5
	Amharic only	18	4.9
	Both languages	144	39.5
Training	Yes	128	35.1
Membership	Yes	350	95.9
Extension visit	Yes	331	90.7
Credit Service	Yes	132	36.2
Off-farm participation	Yes	212	58.2

Table 3. Distribution of respondents by access to mass media channels (n=364)

Communication Channels	Frequency	Per cent
Mobile Phone	123	33.8
Radio	95	26.1
Television	23	6.3
Print media	16	4.4

The result shows that respondents had the least access to print media (4.4%) while the most accessed medium was mobile phone telephony (33.8%). This signifies that mobile phones are emerging as a potential channel for agricultural information for farmers to receive agricultural information. This finding corroborates the findings of Kaske (2020), who reported that the farmers' high need for agricultural information has forced them to use technologies such as mobile telephony in Southern Ethiopia. This indicates that mobile phones amplify the efforts of development agents and other development organisations by disseminating information to dispersed audiences in rural settings. The present study found that none of the respondents had personal or desktop computers and no access to internet services.

3.2 Utilization of mass media channels and its relevance for enhancing agricultural production

This section discusses how radio, television, print media, and mobile phones were utilised by respondents to communicate agricultural information and their relevance for improving agricultural productivity. Table 4 presents the respondents' usage of mass media channels, and Table 5 shows the respondents' frequency of using these channels.

Mobile telephone

Technological advancement has brought various communication tools that create avenues for accessing information. The findings showed the mobile telephone was the most commonly used medium for agricultural information compared with other means of communication among the study's respondents. This finding corresponds with the findings of Mezbah-ul-Islam and Akter (2016) and Ye and Yang (2020), who reported that mobile phones have increasingly bridged the information gap between farmers and various agricultural information sources in developing countries.

The results in Table 3 show that 33.8% of respondents had mobile telephony, and of those, 11.8% were smartphones. Among the users (n = 123), a substantial majority (95.9%) used their phones for personal calls, while only 8% used social media applications. As shown in Table 5, in terms of frequency of usage, 31.7% of the respondents with mobile phones used them regularly, while 49.6% rarely used them to get agricultural information. These results are consistent with those reported by Michael and Sundaraa (2019), who found that farmers in the Wolaita Zone mostly use their mobile phones to call relatives rather than for agricultural purposes.

Table 4. Distribution of respondents by their usage of mass media channels

List of Media Channels	Accessible Channels	Frequency	Percentage
Radio (n=95)	Wogeta FM (96.9)	93	97.9
	Fana FM(99.9)	90	94.7
	Debub FM (100.9)	44	46.3
	FM Addis (97.1)	39	41
Television (n=23)	Ethiopian Television (EBC)	13	56.5
	South Television (STV)	22	95.7
	Walta Television	21	91.3
Print media(n=16)	Fana Television	19	82.6
	Magazine	11	68.8
	News Paper	13	81.3
	Brochure	3	18.8
	Manuals	3	18.8
Mobile Phone (n=123)	Posters	7	43.8
	Personal call	118	95.9
	SMS text	29	23.6
	Listen to radio	43	35.0
	Social media application	1	.8
	8028 free call line	34	27.6

Table 5. Respondents' frequency of using the mass media channel to get agricultural Information

	Regularly		Sometimes		Rarely	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Radio (n=95)	80	84.2	9	9.5	6	6.3
Television (n=23)	17	73.9	5	21.7	1	4.3
Mobile (n=123)	39	31.7	23	18.7	61	49.6

During focus group discussions, respondents were asked to specify the relevance of the information they received on their mobile phones. The results indicate mobile phones have created an interactive environment for farmers to communicate with co-farmers, development agents, government representatives, and non-governmental organizations. Further, they replied that mobile telephones have enabled them to access farming information such as techniques for applying fertilizers, improved methods of cultivation, soil conservation, and planting. Moreover, the discussants highlighted that mobile telephones have linked them with the market to share updated market information to sell their products at a better price. This implies that mobile telephones could contribute to agricultural productivity by effectively delivering agricultural information that elicits the farmers' engagement with potential agricultural information sources.

However, despite this reality, it is impossible to deny that the use of mobile phones for agricultural information sharing among farmers is still low in Wolaita Zone, Southern Ethiopia. Though farmers with mobile phones could use them for various purposes, a large proportion of the farmers (66.2%) who are without mobile phones lack this opportunity and still depend on traditional informational sources. According to the respondents, low ownership of mobile phones coupled with a lack of knowledge, which has resulted from a high illiteracy rate, could account for a lion's share of the low usage of mobile phones. This denotes that information and communication technology, particularly mobile phones, still serve a limited number of rural communities who have access to or own them.

Radio

The researcher interrogated the respondents about their practises of listening to radio. The findings show that few rural dwellers own a radio device that enables them to listen to agricultural news and programmes. Unlike Amplitude Modulation (AM), Frequency Modulation (FM) radio frequencies were widely accessible in the Wolaita zone of Southern Ethiopia. The rural dwellers use expensive rechargeable batteries to run their radios due to the unavailability of electricity and other power supply options. Therefore, to save the batteries, farmers operate the radio at a time when they are available at home or operate it only to listen to the programmes of their interest.

Regarding accessing mass media channels, results in Table 4 show that Wogeta FM 99.9, Fana FM 99.9, Debub FM 100.9, and FM Addis 97.1 radio stations were listened to by respondents in the study area. Results further

revealed that among the respondents with radio (N = 95), a substantial proportion of the respondents (97.9%) listen to Wogeta FM 96.9, which is a community radio station based in Sodo, the capital of Wolaita Zone. The second most listened to radio station (94.7%) in the study area was Fana FM 99.9, which is a multi-lingual commercial radio station. This FM radio station is situated in Sodo and transmits programmes both in Amharic and Wolaitatto languages. The availability of the radio stations and their use of local languages for transmitting agricultural programmes could be listed as reasons for the high utilisation of the two FM radios among the farmers in the study area.

The FM radio stations such as Dehub FM (100.9) and FM Addis (97.1) were listened to by the respondents, though the numbers of listeners were relatively small (46.3 % and 41.0%, respectively) in comparison to the Wogeta and Fana FM radio stations. This is mainly associated with weak signal strength or coverage of frequencies in the majority of rural areas, as these stations are situated far from the study setting. Furthermore, the use of the Amharic language (the country's working language) by Dehub FM (100.9) and FM Addis (97.1) may have contributed to the low preference, as only 4.9 percent of respondents could understand the Amharic language.

As shown in Table 5, out of those who listen to the radio (N = 95), 84.2 percent of respondents regularly listen to agricultural radio programmes while 6.3 percent of them listen to them rarely. This denotes the farmers' strong interest in listening to radio programs. In other words, farmers who owned radios had a high possibility of listening to the agricultural messages transmitted through radio. The findings from the focus group discussion also corroborate this result. It was found that respondents without radio showed a high interest in listening to agricultural radio programmes if they had access to them.

The analysis further showed that 61.1% of respondents with radio thought the time allotted for the agricultural radio programmes was insufficient to satisfy their information needs. This implies that the farmers' demand for agricultural information was obstructed due to the time allocated to broadcasting agricultural programmes. The focus group members also reflected that there were very few agriculture-related radio programmes and even those had very limited time compared to other content broadcast on radio. Furthermore, they stated that they enjoy listening to agricultural radio programmes on a daily basis and prefer to listen to the radio at night or early in the morning. Table 6 presents the radio broadcast time and farmers' preferred time to listen to radio programmes.

Table 6. Radio broadcast time and respondents' preferred time to listen to agricultural programmes

	Morning(am-12 pm)		Afternoon(1pm-5 pm)		Night (6pm-10 pm)	
	Frequency	Per cent	Frequency	per cent	Frequency	Per cent
Convenient time:	56	58.9	48	50.5	64	64.1
Broadcast time:	16	16.8	54	56.8	29	30.8

According to Table 6, 58.9 percent of respondents said the morning is their most convenient time to listen to radio programs; 50.5 percent said the afternoon is their most convenient time; and 64.1 percent said the night time is their preferred time to listen to radio. This makes it clear that night times are the most convenient time for farmers to listen to agricultural radio programs. Despite this, 56.8 percent of the survey respondents indicated that agricultural programmes were broadcast at the time when they were engaged in farming activities. The data obtained from the focus group discussion also confirms that agricultural programmes were not broadcast at farmers' convenient times for listening. Fasina (2015) states that farm radio programmes should be transmitted during times that are suitable for farmers to reach a large number of audiences at a time.

Focus group members established that agricultural radio programmes are relevant for improving their agricultural productivity. They revealed that agricultural information regarding crop production technologies, livestock production, diseases and pest control, weather forecasts, and market information has greatly advanced their farming practices. The participants also indicated that the early warning information they received about climate change and other emerging shocks has greatly helped them to become resilient. Unlike other media outlets, it was indicated by the focus group members that the simplicity of operation and its portability had made radio their best-suited medium for their context. Based on these findings, it could be possible to state that radio is an ideal means for disseminating agricultural information, diffusing knowledge, and mobilising rural illiterate communities towards modern and advanced methods of farming that could significantly enhance agricultural development goals.

Television

As presented in Table 3, this study found 6.3% of respondents had access to television. In the Ethiopian context, access to television has remained limited to areas where electricity is available. As a result, a large proportion of rural residents did not watch television. If television is available, the rural community often watches it in adjacent urban

centres or at the homes of their neighbours. This makes television a rarely accessed medium in rural Wolaita. The findings show that four television channels were dominantly watched by those who had access to television.

Television is one of the mass media platforms that could be used to reach a large number of the population. In the Ethiopian context, however, access to television has remained limited to the areas where electricity is available. As a result, a large proportion of rural residents did not watch television. According to the findings of the current study, only 6.3 percent of respondents in the study area had access to television, as shown in Table It is customary for the rural communities in Wolaita to often watch TV at the nearby urban centres or watch TV at their neighbours' homes if a television set is available. Unlike others, this makes television a rarely accessed medium in rural Wolaita.

The analysis shows that four television channels were dominantly watched by those who had access to television. As presented in Table 4, of those with television (N = 23), 95.7 percent of them were watched South Television. South Television is a regional television agency that has been widely watched in the Southern part of Ethiopia. The high usage of this channel might be associated with its wide coverage of agricultural issues and the plausibility of presenting programmes while keeping the local context. This television channel also presents locally produced agricultural programmes by creating an avenue for farmers to share their opinions with other farmers and enabling them to gain knowledge from experts on the issues of their concerns.

Ethiopian Television, the national television station, was received less interest among respondents than other television channels. The results of the focus group discussion also confirm this result. The focus group participants said that Ethiopian Television gives wide coverage to political content, in which respondents were not interested. The participants prefer to watch this channel for news and other pieces of information rather than use it for agricultural information.

In terms of the frequency of watching television, out of those who have television (n = 23), 73.9% watch it regularly while only 4.3% of them watch rarely. This indicates that, if the farmers have access to television, they use it to receive agricultural information to improve their agricultural practices. The findings further indicated 91.3% of respondents with television prefer to watch it during night times while 30.4 % watch in the afternoon. This shows night times were a convenient time for the farmers to watch television. Table 7 presents the distribution of respondents by their television watching times and times that agricultural programmes are on air.

Table 7. TV broadcast time and the respondents preferred time for watching

	Morning (6am-12 pm)		Afternoon(1pm-5 pm)		Night (1pm-5 pm)	
	Frequency	Per cent	Frequency	per cent	Frequency	Per cent
Convenient time:	8	34.8	7	30.4	21	91.3
Broadcast time:	2	8.7	3	13.0	12	52.2

Regarding the relevance of using television for agricultural information, the focus group discussants reported that television had helped them gain new knowledge that could significantly contribute to boosting their agricultural productivity. The participants further explained that television programmes demonstrate technical skills how to apply new farm technologies and diffuse knowledge, such as how to apply fertilizers, techniques of planting, procedures of using insecticides and fungicides, livestock farming, methods of cultivation, soil conservation, techniques of harvesting, and storage of crops. It was indicated by focus group members that watching the experiences of other farmers on television and viewing the demonstrations and briefs of experts allowed them to acquire new knowledge and experience. This indicates that television was found to be an important medium to demonstrate new skills and easily transfer agricultural knowledge and information to the farming community. However, it was possible to note that the use of television was still low among farmers in Wolaita Zone, Southern Ethiopia.

Print media

Print media play an essential role in disseminating agricultural information. The present study found a small number of respondents (4.4%) use print media for agricultural information in the Wolaiat Zone, Southern Ethiopia. This indicates very low usage of print media for receiving agricultural information among farmers. As shown in Table 4, out of those who access print media (n = 16), 81.3 % of respondents read magazines, 68.8 % read different newspapers, while 43.8 % used various self-explanatory posters. This implies that print media platforms were not widely used by farmers for agriculture as well as for other sorts of information. This may be associated with low print media access for the readership conjugated with the high rate of illiteracy among the farmers.

The relationship between mass media channels and the personal characteristics of respondents

This study considered gender, age, marital status, farm experience, educational level, and language ability as personal characteristics of the respondents. The results show a significant difference between the age of the

respondents and the usage of mobile phones ($t = 3.25, 0.05$). The young respondents were found to use mobile phones more than the old. The average age of respondents who use a mobile phone for agricultural information was 42.6 years, compared with 47.1 years for those who did not.

As presented in Table 8, the gender of respondents was highly associated with the usage of radio ($\chi^2=8.61, 0.01$) and mobile phones ($\chi^2=9.81, 0.01$). It was found that male respondents tend to use radios and mobile phones more than female respondents. This result agrees with the finding of Okwu and Daudu (2011), who reported that gender is associated with mass media usage among farmers in Nigeria. The marital status of respondents was also highly associated with the usage of radios and mobile phones ($\chi^2=5.51, 0.05$ and $\chi^2=6.57, 0.05$), respectively. It was found that radio and mobile phones were more commonly used by married households than other categories of marital status. However, marital status was not significantly associated with television and print media.

The results in Table 8 show the respondents' level of education was positively associated with the usage of radio ($\chi^2=49.93, 0.01$), television ($\chi^2=37.7, 0.01$), print media ($\chi^2=20.98, 0.01$), and mobile phones ($\chi^2=59.13, 0.01$). It was found that a high level of education enables farmers to better use mass media channels for agricultural information. This finding corroborates the findings of Khan et al., (2017) and Adejoh et al., (2016) who reported a significant relationship between education and farmers' utilisation of mass media channels.

Similarly, a significant difference was observed between the farm experience of respondents and the usage of mobile phones ($t=1.72, 0.05$). The average farm experience of farmers who used a mobile phone for farm information was 26.4 years, compared with 28.9 for those who did not. As presented in Table 9, usage of radio ($\chi^2=31.41, 0.01$), Television ($\chi^2=15.55, 0.01$), print media ($\chi^2=4.03, 0.05$), and mobile phones ($\chi^2=36.05, 0.01$) was significantly associated with the respondents' language. Respondents who understood both languages (Wolaitato and Amharic) would have utilised more mass media channels than those who did not. This indicates that language significantly influences farmers' usage of mass media channels for agricultural information.

Moreover, as shown in Table 9, a significant difference was observed between respondents' distance to the urban centre and the usage of print media ($t = 1.57, 0.05$). However, the respondents' involvement in off-farm activities and their visits by development agents were not significantly associated with the usage of mass media channels. This finding is different from the findings of Adejo (2016) and Khan et al., (2017), who found extension visits were significantly related to farmers' usage of mass media channels. Table 8 presents the chi-square test results while Table 9 presents the t-test results of continuous variables.

Table 8. Chi-square test result of categorical variables with communication channels (n=364)

Variables	Radio		TV		Print Media		Mobile	
	X ²	Asymp. Sig (-2-sided)	X ²	Asymp. Sig (-2-sided)	X ²	Asymp. Sig (-2-sided)	X ²	Asymp. Sig (2-sided)
Gender	8.61**	0.00	1.52	0.31	0.22	0.77	9.89**	0.00
Education	49.93**	0.00	37.7**	0.00	20.98**	0.00	59.13**	0.00
Marital Status	5.51*	0.04	2.87	0.43	2.50	0.26	6.57*	0.06
Language	36.05**	0.00	15.55**	0.00	4.03*	0.08	31.41**	0.00
Access to training	0.16	0.71	3.12*	0.07	5.49**	0.02	.03	0.90
Institutional membership	2.71*	0.3	0.98	0.32	0.26	0.47	0.99	0.39
Visit by extension agents	0.33	0.53	2.45	0.12	1.67	0.38	0.51	0.29
Access to credit	1.27	0.26	4.36**	0.03	1.37	0.29	2.91	0.11
Off-farm activities	1.09	0.33	0.37	0.54	0.47	0.61	0.57	0.50

*Significant=0.05, **Significant=0.01

3.3 The relationship between media channels and the situational characteristics of respondents

The respondents' land size, livestock ownership, extension visit, access to training, institutional membership, involvement in off-farm activities, credit access, distance to the farmers' training centre, and their distance from urban centres were categorized as situational characteristics. Table 9 shows a significant difference between the usage of radio ($t = -3.04, 0.05$), television ($t = -4.27, 0.01$), and mobile phones ($t = -1.95, 0.05$) and the land size of the respondents. The average land size of the respondents who use radio and television for agricultural information was

0.63ha and 0.87ha, compared with 0.48ha and 0.50 ha for those who do not use them. This shows that farmers with larger farm size tend to use television more than other mass media channels. Okwu and Daudu (2011) reported that farm area was highly associated with farmers' usage of mass media channels in the Benue state of Nigeria.

Further, the findings show a significant difference between livestock holding and the usage of radio ($t = -3.75$, 0.01), television ($t = -2.79$, 0.05), print media ($t = -3.87$, 0.01), and mobile phones ($t = -4.89$, 0.01). Farmers who owned more livestock were found to use more than one mass media device, which enables them to access more mass media channels. This implies that livestock holding is characterised as one of the important features that define farmers' mass media access and its utilization. The high ownership of livestock and the large size of farmland were also recognised by the local community as indicators of wealth.

The result in Table 8 shows the respondents' access to farm-related training was associated with the usage of television ($\chi^2=3.12$, 0.05) and print media ($\chi^2= 5.49$, 0.01). The possible reason for this might be that respondents' participation in social institutions has created awareness regarding the importance of radio for receiving agricultural information. Likewise, the respondents' membership in social institutions was also associated with the usage of radio ($\chi^2=2.71$, 0.05). A significant difference was observed between the usage of print media ($t = 1.57$, 0.05) and respondents' distance to the urban centre. However, their involvement in off-farm activities and their visits by development agents were not significantly associated with the usage of mass media channels. This finding is different from the findings of Khan et al., (2017), who found that extension visits were significantly related to mass media channels.

Table 9. T-test result of continuous variables with communication channels (n=364)

	Radio			TV			Print Media			Mobile		
	Yes	No	t-value	Yes	No	t-value	Yes	No	t-value	Yes	No	t-value
Farm experiences	27.84	28.2	0.23	27.87	28.13	0.09	25.50	28.23	0.82	26.48	28.94	1.72*
Age (years)	44.16	46.12	0.34	45.09	45.65	0.11	41.13	45.82	1.44	42.60	47.15	3.25*
Land area(ha)	0.63	0.48	-3.04*	0.87	0.50	-4.27**	0.66	0.52	-1.33	0.58	0.49	-1.95*
Livestock (TLU)	2.31	1.61	3.75**	2.67	1.73	-2.79*	3.26	1.72	-3.87**	2.34	1.51	-4.89**
Distance to FTC	2.47	2.4	-0.29	2.48	2.44	-0.15	2.63	2.43	-0.62	2.43	2.55	0.13
Distance to Urban	13.25	12.30	-0.72	14.74	12.40	-0.98	8.56	2.74	1.57*	12.99	11.69	1.06

*Significant=0.05, **Significant=0.01

3.4 Factors influencing the usage of mass media channels for agricultural information

The present study scrutinized factors affecting the usage of mass media channels for accessing agricultural information among farmers in Wolaita Zone. The researcher interrogated focus group discussants to identify the challenges they encountered in using mass media channels for agricultural information. The following were identified by focus group members as major factors influencing the farmers' usage of mass media channels for receiving agricultural information.

Low ownership of media devices

The finding shows that the absence of mass media devices has influenced farmers' utilisation of mass media channels. The focus group discussants stated that the majority of farmers have no mobile telephony, radio, or television to receive updated agricultural information for their farming activities. The mass media channels were not affordable for the majority of farmers, and they were not aware of the contribution of the information they could receive through these channels. Furthermore, in some areas, farmers could not listen to the radio due to poor radio signals. Consequently, this has made farmers dependent on traditional interpersonal information-sharing networks. This indicates few farmers were accessing mass media information due to a lack of access to mass media channels.

Lack of electricity

Lack of electricity and power supply was reported as the second influencing factor for the low usage of the mass media channels. The finding from the focus group discussion revealed that except for those villages nearer to the urban centres, the majority of rural villages in the study area have no access to electricity and other power supplies. The group members stated that most farmers travel to urban centres to charge their mobile telephones and other electronic devices. Further, in some areas, farmers could not listen to the radio due to poor radio signals. For this reason, some farmers did not buy mass media devices like television even though they could afford them. This reveals rural electrification is one of the key factors for the low usage of mass media channels and a critical component for effective communication with farmers in rural Wolaita.

High level of illiteracy and lack of knowledge

The findings show that a high level of illiteracy contributed to a lion's share of the farmers' low usage of mass media channels in the Wolaita Zone, Southern Ethiopia. As indicated above in Table 2, the majority (55.2%) of farmers were illiterate, which could negatively affect the farmers' usage of media technologies such as mobile telephony. It was reported that farmers lack knowledge of reading instructions and operating communication devices like mobile telephones. In some instances, farmers were not aware of the agricultural information services delivered through these media. For instance, the researcher interrogated focus group members to state whether they knew of the 8028 free call lines that provide agricultural information services in the local languages. The result shows that even some of the model farmers did not have awareness of the 8028 hotline service, though they had a mobile phone at hand. This indicates illiteracy and the knowledge gap have influenced farmers' usage of communication media.

The barrier of language

The focus group discussants identified language barrier as one of the impeding factors. Focus group discussants replied that FM radio programs, TV broadcasts, brochures, newspapers, and other print forms of mediums use the Amharic language, which they did not commonly use for communication purposes. It is indicated by the focus group members that mobile phone applications also require some basic knowledge of the English language to operate. This makes it difficult for farmers to easily operate and fully understand the agricultural message delivered by native languages.

Inadequacy of air time for agricultural programmes

The focus group members underscored that the broadcasting time allocated for agricultural programmes in respective media outlets was not adequate and the coverage of agricultural subjects was very low. The focus group members underscored that agriculture-oriented programmes did not get wide media coverage and that high attention was given to non-agricultural issues. They further disclose that entertainment-based programmes dominated the broadcasting time, particularly on radio and television. According to the focus group members, though they were not widely accessible, newspapers and magazines were also largely covering political issues more than agricultural content. This reveals agriculture, which is the mainstay of the national economy, has been marginalised by mass media broadcasters and the focus has shifted to the broadcasting of other types of programmes.

The inconvenience of broadcasting time for agricultural programmes

Findings showed agricultural programmes were broadcast at times that were not suitable for respondents to listen to or watch on mass media channels. In the case of radio, for instance, of those with radio (n=95), the majority of farmers (64.1%) prefer to listen to the radio at night; whereas 56.8% of respondents replied that agricultural programmes were aired usually in the afternoon. This indicates that the broadcasting time of agricultural programmes was not convenient for farmers to listen to radio programmes. In other words, programmes during the times when farmers were not listening or watching has considerably weakened their usage of information disseminated through these media.

Weak feedback mechanism

Feedback is an important component of effective communication. A weak feedback mechanism was reported as one of the factors impeding the usage of mass media channels. Findings from the focus group discussion show that feedback mechanisms were not deployed to ask or reply about the information disseminated through mass media channels. Participants disclosed that they still did not make any requests or get any feedback from television or print media regarding the agricultural programmes they disseminated. However, they indicated that they sometimes request radio broadcasters to give further information or clarification via phone, even though they mostly did not get appropriate and satisfactory feedback. This implies that the feedback mechanism was not properly placed by the mass media to receive feedback from the listeners/viewers regarding the programmes broadcast to them.

4. Conclusion and Recommendation

This study identified mass media channels accessed by farmers and analysed their usage for communicating with the farm households in Wolaita zone, Southern, Ethiopia. The results indicated radio, television, print media, and mobile phones were accessed by farmers to receive agricultural information. The analysis revealed relationships between the respondents' use of mass media channels and their gender, education, marital status, language, land size and livestock ownership.

Despite their potential, the usage of mass media for agricultural knowledge and information transfer is still low in the Wolaita Zone. The low usage of mass media channels by farmers is attributed to the low access to mass media channels, high levels of illiteracy, lack of electricity, language barriers, absence of feedback mechanisms, and inconveniences of broadcasting time of agricultural programmes. From this, it is possible to conclude that mass media channels have not been extensively used by farmers for agricultural purposes in Wolaita Zone, Southern Ethiopia.

Radio and mobile phones are found to be the most important mass media channels in farmers' context, but their potential is not being realized.

To this end, the following recommendations were proposed based on the findings presented in the preceding sections.

- The farmers should be encouraged to own mass media outlets such as radio and mobile phones.
- Government and other development organisations work together to improve communication facilities such as power supply.
- The mass media channels should be encouraged to raise the number of agricultural programmes they transmit per week and make sure that the programmes are aired at the appropriate time when farmers are listening to them.
- The use of mobile phones should be promoted due to their potential to facilitate effective communication between farmers and other development organizations.
- This study also calls for the policy recommendations to critically revisit the current extension policy regarding the usage of mass media for agricultural communication.

Recommendation for future research: Even though the present study examined the farmers' access to mass media channels and its utilization patterns, further research is required to find out the most appropriate contents of the agricultural information (messages) to disseminate to those farmers who have access to those mass media channels.

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