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Original Research

Communication practices of agricultural extension: the case of north Wollo zone

Assefachew Eshetie[1]*, Adem Chanie[2]

[1]*PhD Candidate, Bahir Dar University and Debark University, Bahir Dar, Ethiopia*

[2]*PhD, Bahir Dar University, Bahir Dar, Ethiopia*

** Corresponding author: assfacheweshete@gmail.com*

Abstract

This qualitative study method aimed to assess agricultural extension communication practices and the use of agricultural information from the extension service and to identify the influencing factors in three Lalibela kebeles. A purposeful sampling technique was used to select the samples for the study. To this end, expressive data were collected through in-depth interviews, observation, and document analysis from farmers, development agents (DAs), and communication workers (CWs). In-depth interviews and observation sessions were conducted with 18 farmers, 4 DAs, 2 extension workers, and 2 communication workers. The findings from the thematic analysis employed revealed that the agricultural communication practices in the study area were generally low. The use of electronic and print media, in addition to interpersonal and group communication means, is also limited. Although farmers receive agricultural messages through interpersonal communication methods from extension workers, model farmers' concept/demonstration sites, village meetings, and field days, agricultural productivity still fails to achieve the desired goals. As the research result showed, farmers receive messages from electronic media such as radio and print media such as flyers. Communication approaches, on the other hand, were top-down, in which programs or texts were shaped by communication workers with little involvement from farmers, agricultural extension workers, and DAs. In conclusion, for communications, whether print, electronic, or interpersonal, to play a critical role in communicating agricultural messages to the farmers and preventing agricultural development problems thereof, it needs to consider and integrate agricultural extension communication means.

Key words: agricultural, extensions, communication

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1. Introduction

1.1. Background of the study

The core of Ethiopia's economy is agriculture. Sixty-nine percent of the 113 million hectares of land are deemed suitable for agriculture and the cultivation of crops and cattle. Merely 17% of its agriculturally suitable land, or 14 million hectares, are farmed, and the farming system is dependent on rainfall; currently, just 1% of arable land is irrigated. Ethiopia's agricultural industry is therefore susceptible to the effects of climate change, including dry periods and droughts. The nation's land degradation is mostly caused by inappropriate land use, inadequate land management techniques, population pressure, excessive grazing, deforestation, and the use of manure and crop wastes as fuel in rural regions. A few more things that make these worse are a lack of sufficient inputs, unstable land tenure, and poor agricultural extension and research services (FDRE, 2012; Yigezu, 2021).

Without farmers being able to use their land effectively, it is impossible to ensure agricultural development at the right rate and on a sustainable basis. Thus, ensuring that land is available to those who can and want to live off of agriculture is essential and a positive step toward the responsible use of land resources. It is anticipated that prudent management of our natural resources will enhance agricultural output and promote sustainable development (FDRE/MOFED, 2012). However, a lot of lone small-scale farmers frequently lack the resources and abilities to organize, demand, or pay for the communication and information access services they require for growth (Getahun, 2020). The ability to use ICTs, particularly new media, and the corresponding degree of education are frequently low. Rural populations' ability to self-organize makes it possible to set up and distribute information and knowledge services more effectively, which in turn makes it easier for key stakeholders to communicate with one another (Castello & Braun, 2006).

Ethiopia's various sector programs see a decline in the budget allocated to the agricultural sector. The primary purposes of the funding need are agricultural research, the implementation of the extension package program, and the provision of improved inputs (technology) that the beneficiaries are unable to pay for. The cost includes integrated farm water collection, credit services, extension communication, media development, conservation of natural resources, and agricultural technical and vocational training, in addition to the continuing extension program (Research Institute (IFPRI),

2018). Additionally, according to the experts, the advancement of agricultural production takes into account the application and usage of new discoveries and information (Nikolic & Arsenijevi, 2020).

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The Ethiopian government is still working to establish favorable conditions that would attract international investors and the private sector to engage in agricultural production. According to FDRE/MOFED (2012), these initiatives are expected to increase competition in the market for fertilizers, better seed, and other inputs, leading to a steady supply and competitive prices that can help boost output improvements in terms of both quality and quantity. However, very little is done to educate farmers about new agricultural methods, and the problem of traditional thinking still exists (Teshome, 2006). Like in other parts of Ethiopia, these are significant issues facing farmers in the research area.

In order to prevent farmers from experiencing food insecurity as a result of inappropriate land use and management, responsible agencies need to communicate about the root cause of the issue. However, in developing nations, there is still a severe lack of information and communication available to farmers. According to Teshale et al. (2023), the network, people, and infrastructure are not adequately developed, utilized, or managed.

This study attempted to investigate how development communication was used for agricultural extension in Lalibela, which is located in the Amhara Region, taking into account the aforementioned issues that farmers encountered. The benefits of effective communication for agricultural and other rural development areas, such as forestry, environment, and nutrition, have been extensively researched by FAO. As a result, the role of communication has changed from being one-way (top-down message

transfer from extension agents to farmers) to a social process that begins with farmers and unites both groups in a two-way exchange of information among communication equals (Servaes, 2008).

Despite the fact that not enough crops can be grown on the soil, many people in this research region make a living by plowing their farms during the area's pleasant weather. This environment's land is severely eroded, and water loses the top soil that is essential for agriculture (Tibebu, 2011). Despite Lalibela's woyina dega (mild) climate, farmers are extremely susceptible to food insecurity since they are not well-versed in modern technology. For this reason, this research will concentrate on agricultural communication strategies.

Farmers must be aware of their deteriorating environment in order to apply various agricultural extension options since they are susceptible to food insecurity. However, the success of sustainable agricultural development depends more on the individuals using the inputs than it does on the materials (such as fertilizer and seeds). This emphasis on human resources necessitates better knowledge and information exchange on agricultural output in addition to the use of suitable communication channels, technologies, and approaches (Castello & Braun, 2006).Thus, the goal of this study was to investigate Lalibela woreda's agricultural extension communication strategies.

1.2. Statement of the problem

Farmers frequently adopt new agricultural technologies extremely slowly and research is not focused on the requirements of farmers when there are weak connections between advisory services and research. Low agricultural production has been attributed in numerous countries. Low agricultural productivity can be attributed to a number of reasons, including inadequate communication systems, bad methodology, ineffective technology delivery systems, poor information packaging, and poor links between farmers and research-advisory services (Getahun, 2020). Ponniah et al. (2008) also highlighted the fact that food and agricultural innovation systems in developing nations face novel and more complicated difficulties in a world that is changing quickly. Combating poverty, guaranteeing food and nutrition security, and safeguarding the environment continue to be significant obstacles for those working in global development today.

Thus, since the early 1970s, Ethiopia, a developing nation, has had a food shortfall. Upon closer examination, Ethiopian agriculture has not been able

to produce enough food during the past three decades to sustain the nation's fast expanding population (Jilito & Wedajo, 2021). Even worse, the nation has often suffered from droughts that have taken thousands of lives. It should be mentioned that a sizeable amount of the nation's whole food supply has come from food aid. For instance, between 1985 and 2000, Ethiopia received 726,640 metric tons of food aid annually (Debebe & Zekarias, 2020).

According to Matebu (2006), citing FAO/GTZ (2005), insufficient communication throughout the Research-Extension-Farmers continuum, including inappropriate information packaging and a lack of communication systems, has contributed to the inefficiency of agricultural development in many countries.

This can serve as a concrete illustration for Ethiopia, where the majority of farmers training centers (FTC) lack access to electricity, DVD players, televisions, and other cutting-edge teaching tools including laptops, screens, and overhead projectors. Furthermore, according to Wordofa and Sassi (2017), FTCs do not provide farmers with any independent training materials, manuals, or learning resources.

Despite the fact that the soil is no longer fertile enough to produce enough crops, Lalibela's farmers still rely on agriculture. The farm needs fresh inputs for agricultural extension as well as more fertilizers. However, there is a dearth of extension programs designed to educate farmers about the use of new technology in agriculture, and farmers are not employing contemporary seeds, fertilizers, pesticides, or anti-weed products. Farmers in this region were consequently unable to secure their food.

Ethiopia has been the focus of numerous research projects aimed at solving the issue of agricultural productivity. However, farmers did not share or effectively employ these investigations. Weir and Knight (2000), for instance, contended that farmers need education to embrace agricultural innovation; nonetheless, Ethiopian farmers continue to rely on their customary farming practices. Ethiopian agricultural extension began in 1931 and underwent a number of ways, as Kassa (2003) and Berhanu et al. (2006) have noted. However, there were insufficient communication strategies to integrate farmers and agricultural researchers. While these and other studies on agricultural extension in Ethiopia have focused on the inadequacy and low acceptability of communication research linked to agricultural production and productivity, none have focused as much on the issue of low capacity experts and development agents, low morale and high

turnover of extension staff, and lack of operational budget and facilities. The agricultural extensions approach is intended to implement transfer of improved technologies, knowledge, skills development, and the provision of other institutional support services via Farmers' Training Centers. This study aims to investigate agricultural extension communication methods in Lalibela woreda utilizing the fundamentals of diffusion of innovation and participatory communication methodologies, in light of the paucity of research on the subject.

This study's primary goal is to investigate the communication strategies utilized in agricultural extension in Lalibela, with a focus on the following specific research questions: how are messages about agricultural extension targeted to farmers? What communication strategies are employed by DAs, or agricultural extension workers? How can farmers discuss new technology for agricultural extension with one another? Describe the extent to which farmers rely on agricultural messaging from DAs and extension workers to apply new agricultural extension inputs; identify any communication gaps between DAs, farmers, and extension workers.

2. Theoretical frameworks

The primary theories employed in this research are the diffusion of innovation and participatory communication, which were selected based on their respective roles and attributes in agricultural extension communication strategies.

Participation is crucial in any development decision-making process because it fosters knowledge and information sharing as well as the development of trust, dedication, and the proper mindset in development projects. In order to combat stereotypes and advance a better appreciation of diversity and plurality, a new mindset is required, one that fully respects the equality and dignity of individuals who live in various environments and behave in various ways (Servaes, 2008; Chauhan, 2007). At all engagement levels, reciprocal collaboration is emphasized in participatory communication. Mutual trust, listening to others, and appreciating the other person's attitude are all necessary. With the use of participatory communication, one can shift from trying to inform and convince others to alter their behavior or views to trying to help various stakeholders share information in order to solve shared issues.

Additionally, Hancock (2007) clarified that the diffusion method of communication—which is employed in this study along with the

participatory communication method—can be used to spread agricultural extension methods. Diffusion of innovation communication use strategies like social marketing, advocacy, campaigns, or education to enlighten or convince people to change their behavior. While some have praised these models as persuasive and cost-effective means of promoting change with large audiences, others have criticized them for taking a linear, deterministic, top-down approach that frequently overemphasizes the role of media while ignoring the larger social framework that shapes change (Mefalopulos, 2008). When larger social frameworks are neglected, alternative mechanisms are used, such as spreading extension messages during religious holidays or other sporadic social gatherings at churches or mosques. These indicate a lack of focus when it comes to spreading target extension messages, as the people attending these events may not be the target farmers for whom the messages are intended (Berhanu et al., 2006).

These theories are essential to evaluating how agricultural communication is carried out through the participation of all concerned bodies since agricultural productivity and production necessitate the involvement of all concerned bodies and new agricultural technologies must be made available to all farmers.

2. Literature review

2.1. The challenges of agricultural extension development in Ethiopia

Upgrading the labor force's agricultural skills is essential to maintaining productivity gains and ensuring that technical advancements based on those gains are achievable. Improving the farming practices of the ignorant farming population is the top priority when it comes to enhancing farmers' agricultural abilities since it would quickly boost agricultural output. However, due to illiteracy, their efforts are limited in their ability to apply contemporary technologies and assimilate novel concepts on the ongoing change of agricultural methods (FDRE, 2012). For instance, Ethiopia increases agricultural productivity through the usage of farmer training centers (FTCs). But because of their shoddy construction, these FTC buildings need constant upkeep to be operational.

Additionally, Kassa and Degnet (2004) clarified that Ethiopia's agricultural extension problems stem from the country's low rate of acceptance of contemporary agricultural inputs, shrinking farm sizes, continuous cropping, reliance on rainfall, and usage of conventional farming implements and tools. The shrinking size of farms and the cultivation of

poor soils on sloppy and marginal lands that are extremely prone to soil erosion and other degrading processes are also consequences of population pressure in rural areas.

Another issue with using agricultural extension is that it can be difficult for agricultural firms to get the land they need and take part in agricultural production. While some grads could be fortunate enough to have their own capital resources, others might not be. As a result, in order to actively facilitate agricultural extension activities, agricultural extension must take care of these unhappy graduates (FDRE, 2012).

Another obstacle to agricultural improvement is the erratic nature of agricultural policy concerning the interchange of states. As a result, as governments changed, Ethiopia's agricultural research and extension programs underwent various methodologies. First among them was the Imperial Ethiopian College of Agriculture and Mechanical Arts, which actively worked to establish national networks for agricultural extension and research. The Ministry of Agriculture took over national agricultural extension operations from IECAMA in 1963. Similarly, the Institute of Agricultural Research (IAR), which had just been founded, was given control over agricultural research in 1966. It had major and small stations that covered the main ecological zones, important commodities, and disciplinary groups, as well as autonomous management. Ethiopia has used a variety of extension strategies over the years, starting with the creation of agricultural extension and continuing with the current strategy. Their contributions to tangible reforms in the agriculture industry, however, fall well short of expectations. Upon closer inspection, the various expansion approaches have been planned and executed without the involvement of the same individuals for whom they were intended (Kassa & Degnet, 2004). The sector experiences low productivity and production as a result of all these difficulties with agricultural extension. Integration of higher level personnel with end users must be done with expertise if agricultural extension is to become more productive.

2.2. Participatory communication

All interested farmers are encouraged to participate in farming by means of participatory communication, utilizing new innovations, technology, and significant farming systems. In addition to this, they may also be reliable in their choices to take part. With the combination of new scientific knowledge and their ancestors' or pre-existing knowledge of agriculture,

communication plays a crucial role in involving all rural farmers in this participation and enabling them to be effective producers (Day & Monroe, 2000). Furthermore, the top-down and bureaucratic methods of communication between farmers, extension agents, and DAs are rejected through the use of participatory communication. The community's participation was the new focal point. Therefore, everyone has the fundamental right to be heard, to speak for themselves, and to not have their voice misrepresented or altered by another party. This open communication style aims to foster the mutual respect, trust, and listening that are necessary for the participatory communication model to flourish in such a setting. Three justifications for participatory communication can be found by taking into account the effectiveness and inclusion of native citizens in the development: first, the native population is in charge of having their own pertinent information; second, they have a fundamental human right to participate in the creation of their own advancement; and third, by including the native population, more support will be garnered, which will help to achieve shared objectives (McPhail, 2009).

Additionally, participation has been used to shift away from the "dominant paradigm" of top-down planning and implementation of developmental activities and toward self-development, where the emphasis is placed on self-reliance and building on local resources, with villagers and the urban poor serving as the primary audiences. The fundamental functions of communication in this process are to disseminate information about local groups' successes in self-development so that other groups can learn from their experiences, respond to requests for appropriate innovations from the community, and provide technical information on development problems and opportunities (Rogers, 1983). Participatory techniques, as Castello and Braun (2006) also covered, are instruments for including partners in dialogue, decision-making, and planning related to rural development. In order to address the requirements of the rural population through feedback and ongoing information exchange between partners, interest groups, communities, and official institutions including those impacted by poverty, involvement and communication are crucial components of these efforts. In order to close the gaps between the knowledgeable and the doer, the less and more trained, the rich and the poor, the rural and the urban, and the giver and the receiver, effective participatory approaches are applied across all sectors. Many service needs won't be met without effective participation, local knowledge—often accumulated through generations of observations and experience—won't be acknowledged or heard, new knowledge won't be accepted (ownership), and interventions' sustainability won't last long.

On the other hand, Castello and Braun (2006) noted that the following are the main obstacles to using participatory methods in communication for development: it takes a lot of time and resources for training; social and educational differences influence how people understand participation and communication styles; groups with stronger communication skills and perceived higher social status can dominate weaker ones; there is a lack of baseline data and clear monitoring and evaluation procedures to demonstrate qualitative and quantitative impacts; and it is still challenging to introduce participatory approaches in hierarchical and centralized institutions and get them accepted.

2.3. Approaches of agricultural extension

It is better to first clarify what approaches, models, and methodologies are as well as how they relate to agricultural extension. According to Ponniah et al. (2008), an approach is a system's philosophy and manner of operation. It functions as a kind of manual for the system's links, leadership, program, structure, and resources. A model is a schematic representation of a system or phenomenon that explains its observed or predicted attributes and may be applied to more research on its features. The term "methods," which refers to the strategies an extension system employs for tasks like demonstration, is also associated with approaches in agricultural extension. As previously stated, an approach is the beginning point, not the end, of a specific course of action. Various approaches share common agricultural extension phenomena, such as the sharing of functions through non-formal education, the inclusion of agriculturally related content, the use of communication techniques, and the goal of enhancing the capacities of rural populations.

Although there is a common extension phenomenon among agricultural extension systems, each of the following approaches is discussed independently, each with its own unique purposes and characteristics.

The typical agricultural extension strategy makes the assumption that local people have access to technology and expertise, but they are not using it. Typically, the method is heavily centralized and governed by the government. According to this perspective, the communication system is a top-down strategy that reaches out to the end users, or farmers, from the topmost specialists. As a result, farmers have very little say in agricultural massages, which also results in minimal extension practices. This is how the Ministry of Agriculture's agricultural extension programs are organized, with ministers at the top and field extension officers at the bottom of the hierarchy. This method gives farmers information on several production

options from a single source, but it lacks a two-way communication flow. The majority of resource-poor farmers in Ethiopia are marginalized in this supply-driven program. Additionally, the field-level extension service is understaffed and characterized by passive transmission of recommended messages to farmers with little adaptation of technology to local contexts. Finally, the credibility of the front-line field-level extension workers among smallholder farmers is being undermined. The nation presently employs the agricultural technical and vocational education training (ATVET) approach to lessen this limitation (Davis et al., 2009; Ponniah et al., 2008).

One of the most well-known contemporary ways is the training and visit approach, which enables constant adaptation to farmers' needs by allowing farmers to continuously submit feedback to extension agents and research workers. T&V is intended to encourage farmers to produce more of a certain crop. This somewhat centralized strategy is predicated on a meticulously organized calendar of farm visits and agent and subject matter expert training. Accordingly, it employs a top-down strategy that emphasizes training farmers to make the most use of the resources that are available and spreading simple, inexpensive better practices (Ponniah et al., 2008). In the Ethiopian setting, FTCs serve as agricultural demonstration plots located close to farmers' homes, serving as teaching centers for them.

The approach known as participatory agricultural extension makes the assumption that farmers' living standards can be raised by gaining more knowledge and enforcing its effects through active participation in meetings, action, small-group and large-group learning, travel, and local technology sharing. Because extension agents are expected to live and interact with farmers, the participatory agricultural extension technique is more cost-effective and efficient, but it also places more of a duty on them to organize and encourage farmers. Under the Participatory Extension Approach (PEA), extension workers must transform from being merely agents for externally imposed technological concepts to facilitators and catalysts who assist communities in achieving their own objectives. PEA incorporates community mobilization; strengthens problem-solving, planning, and management skills; encourages farmers to adopt and develop new and appropriate technologies/innovations; encourages farmers to blend them with new ideas; and acknowledges the homogeneity of communities. These are just a few of the characteristics of PEA (FDRE, 2012; Ponniah et al., 2008).

2.4. Applications of communication for agricultural extension and development

Communication is utilized to enlighten audiences on development objectives, activities, and outcomes, as Mefalopulos (2008) noted. Here, communication is defined as the exchange of messages and information. In the alternative, communication is used to involve stakeholders, evaluate the circumstances, and create strategies that will lead to better and more sustainable development initiatives. This is not just about sharing information; communication is also used to create new knowledge and consensus, which will help to facilitate change. Both are significant and call for distinct skill sets and bodies of information. Similarly, Servaes (2002) claimed that through spreading messages that nudge the public in favor of development-oriented programs, communication is employed to support development advantages. It is employed to enlighten the public about initiatives, highlight their benefits, and urge support for them. A common instance of this type of approach is seen in the context of agricultural projects, where communication tools like radio, television, posters, and brochures are used to try and convince the public to embrace agricultural extensions through campaigns or real-world actions by agricultural stakeholders.

It is anticipated that agricultural advising services, which encompass conventional extension, consultancy, and agricultural information services, will help clients adopt new technology. In direct response to their clients' needs, research and advisory services' duty is to offer highly accurate, targeted, and objective technical and management information and advice. When people possess Agricultural Knowledge and Information Systems (AKIS), they can be connected to one another in order to facilitate and encourage reciprocal learning as well as the creation, exchange, and use of technology, knowledge, and information pertains to agriculture. In order to connect knowledge and information from many sources for better farming and improved lifestyles, this system includes farmers, agricultural educators, researchers, extension agents, and the private sector (Castello & Braun, 2006).

These gifted and informed individuals received their specialized training in agricultural communication from a professional communicator with a foundation in biological sciences and agriculture through university programs. For imaginative young communicators who are interested in food, agriculture, or the environment, it is an excellent choice. Students gain experience interacting with audiences in rural, suburban, and metropolitan

areas using a range of media, including newspapers, magazines, radio, television, and the internet. Due to the increased need for qualified communicators with specialized knowledge of science and agriculture in the business sector, including mass media, government agencies, agricultural commodities groups, and advertising and public relations businesses (Tucker, 2013).

From this, we can infer that agricultural enterprises, farming methods, new agricultural technologies, and problem-solving techniques are all informed by communication. Additionally, Castello and Braun (2006) state that rural communication is an interactive process in which farmers, extension/advisory services, information providers, and researchers exchange information, knowledge, and skills pertinent to development either directly or through media like print and radio. The goal of rural communication is to equip rural residents with the knowledge and skills they need to make better decisions and to enhance their standard of living. Moreover, rural populations are the focal point of every development project in communication for development methodologies. The development of knowledge, decision-making, and action capacities—the cornerstones of the delicate cooperation between the government, civil society organizations, and the private sector—is facilitated by communication, as Oepen and Willner (2006) further explained. Communication also serves to exchange information and create consensus among divergent opinions and interests. Two-way communication is, so to speak, the "lifeblood" of every plan. A plan cannot succeed without it since important stakeholders must cooperate and work together (Rivera & Qamar, 2003).

Nowadays, a large number of people live in rural areas of emerging nations. Because of this, utilizing communication—in particular, skill training, modifying unfavorable attitudes, and delivering pertinent information—could accelerate the rate of technology transfer. The primary purpose of small media, such as radio, flip charts, illustrated booklets, village theater, and video, was to effectively communicate with the community, province, or area. The strategies included resources to improve interpersonal communication and multimedia marketing to enhance group meetings led by extension agents. Participatory techniques have evolved throughout time to incorporate intended beneficiaries' perspectives from the outset when creating project objectives and choosing adult education and communication strategies that would aid in their execution. Today, telecommunications and Internet-based ICTs (information and

communication technologies) herald a radical shift in moving information and experiences from global to rural networks and a potential boon to eradicating pockets of world hunger as wireless infrastructure spreads and bandwidth increases (Servaes, 2002; Coldevin, 2003).

Additionally, Leeuwi and Ban (2003) presented other fundamental justifications for communication services. These include advisory communication, which takes place when farmers approach communicators for advice on how to handle pressing issues related to operations management, like how to combat a disease they've previously encountered or what crops to plant next. In an advisory communication, the communication worker's role essentially consists of consultation or consolation, depending on whether knowledge provision or process guidance is prioritized. This involves facilitating horizontal knowledge exchange, which disseminates agricultural knowledge and innovation from seasoned farmers to novice farmers. Diffusion communication is used for agricultural extension during this experience-sharing process. It also generates technological innovations, which are used to arrive at appropriate and coherent innovations in the face of specific challenges and/or problems. Here, communication workers' primary role is to facilitate the process, and it's important to work toward striking a balance between new technological devices and new social-organizational arrangements. Finally, conflict management is used to resolve disputes that arise from stakeholders' lack of understanding of new technologies and communication barriers between extension workers and technology users. In this period, communication professionals frequently face issues that have an impact on their work and may even entangle them; they also promote organizational growth and capacity building, which is utilized to ensure that farmer and community groups are working adequately. Communication professionals can play a significant role in strengthening a particular group's competence and in the development of organizations and human potential. Change agents can play a variety of roles in this context, such as spearheading organizational development, participating in organizational activities and procedures, offering training in organizational skills, facilitating organizational change processes, and offering persuasive technology transfer to persuade farmers or other target groups to adopt particular technological packages and/or to accept certain IDEAS. Rather than acting as a consultant or facilitator, the communication worker's function in persuasive transfer should be considerably more focused on deliberately changing the behavior of farmers. Farmers are more likely to be the recipients of persuasion than the

demanders since most individuals do not ask to be convinced in a certain direction.

2.5. ICT for the dissemination of agricultural knowledge and information

ICT can be extremely helpful in providing resource-constrained farmers with current knowledge and information on agricultural technologies, best practices, markets, pricing patterns, and weather, as UNDP (2012) elucidated. The majority of countries' experiences show that knowledge management practices in agriculture have significantly improved as a result of the quick development of ICT, which makes data and information easier to exchange. ICT is still not widely used in Ethiopia to gather and share knowledge and information, nevertheless. Radio is currently a commonly utilized medium for sharing and informing users about agricultural issues, such as new and improved farming techniques, production management, market information, and other issues, among other ICT-related activities. The distribution of knowledge and information through radio programs is being strengthened since it is strategically important in reaching the majority of smallholders.

In order to connect the potential of emerging information and communications technologies (ICT) to improve communication among stakeholders in agricultural and rural development, the Rural and Agricultural Development Communication Network (RADCON) was established in Egypt in 2004. Its goals are to illustrate the principles of participatory communication. Thus, the goal of participatory communication in development is to make it easier to incorporate new and traditional media channels with interpersonal communication techniques, all the while enticing stakeholders to be included in the process. The development of internet-based technologies has opened up new avenues for this kind of involvement and enhanced resource-poor groups' access to information, assistance, and knowledge sharing (Kora & Kassem, 2010).

3. Research methodology

The research concentrated on creating explanations for social phenomena, on experience reports, or on data that could not be accurately stated statistically, hence a qualitative method was employed to undertake this examination. In other words, the goal of qualitative research is to better understand the social environment in which we live and the reasons behind

the state of affairs. It is focused on the social dimensions of our reality and aims to provide answers to questions such as how and why cultures and practices have evolved in particular ways, why people behave in particular ways, and how opinions and attitudes are formed (Hancock et al., 2007).

Qualitative data collection techniques, including observation, document analysis, and in-depth interviews, were used to gather detailed information from the experiences of farmers, extension agents, and DAs in order to comprehend the difficulties farmers face in communicating with one another, the issue with agricultural extension, and the general lack of food security.

According to Have (2004), qualitative research is particularly useful for examining shared characteristics in a small number of cases where numerous factors are considered. "Using methods intended to make theoretical ideas and empirical categories easier to understand, cases are thoroughly analyzed. As a result, Lalibela has been used as the case study in this study, with three kebeles serving as the specific focus areas. The researcher chose to use the case study because she was curious about the methods used in agricultural extension communication to increase productivity and agricultural output in these three kebeles.

3.1. Subjects of the study

The main sources of data for this research were 18 farmers, 2 extension workers, 4 DAs, and 2 communication workers with different educational background, age, and experience.

3.2. Sampling

According to Hancock et al. (2007), sampling can take place during several phases of data collection, analysis, and reporting in qualitative research. In fact, sampling is ongoing; the researcher employed the purposive sampling technique in this investigation. In addition to these, research samples included DAs, communication specialists, and extension professionals with expertise in agriculture. These individuals were specifically chosen for the study since it is anticipated that they will supply crucial data.

This research has been conducted at Lalibela in three kebeles: 01, Keble 02, and kebele 03. The reasons for conducting in these kebeles were because most of the population depended on agriculture for subsistence.

With regard to the study participants, 26 people were involved as a sample in this research. Though small, the data gained from these samples might show the direction as to what should be done in the future in relation to communication in agricultural extension context. Some profiles of participants of the research are presented as follows.

Table1: Profiles of participants

Participant	sex		Age		Educational background	Experience
	M	F	M	F		
18 farmers	12	6	28-64	22-67	From uneducated to TEVT college graduate	Experienced in farming
2extension workers	1	1	38	40	Degree holders	Experienced in extension work
4 DAs	3	1	24-36	29	Degree holders	Experienced in extension work
2 Communication workers	2	-	26	-	Degree holders	Experienced in communication

3.3. Data-collection tools

Different data gathering tools that were relevant to answer the research questions were used. Among the different data gathering tools, the researcher used observation, document analysis, and in-depth interview. These data gathering tools were crucial to collect complete data from different participant farmers, DAs, communication workers, and agricultural extension workers. These data gathering tools have their own characteristics and applications in this research. The in-depth interviews were conducted from 18 farmers, 2 extension workers, 4 DAs, and 2 communication workers. Structured and semi-structured interview items were used. The researcher also used field work observation, to study the agricultural communication practices in the natural environment where it occurs. Fieldwork observation was taken as a major instrument to investigate what actually happened in farm communication. Therefore, farmers, extension workers, and communication workers were observed while communicating with each other. They were observed using an observation checklist

(follow-up questions or probes) based on what the participant will describe during the interview. The checklist included six items that were all concerned with communication practices. Document analysis included documentary films, flyers, photographs, programmes, and brushers (Hancock, 2007).

3.4. Procedures for data collection

The researcher conducted the farmers' interview in their village in April 2015 and 18 farmers were recruited for the interview. In-depth interviews were organized at interviewees' convenient time to avoid risk of inaccurate data due to fatigue, time constraint and/or participant discomfort.

The researcher used interview guide questions to conduct interviews. The interview guides used were designed following general as well as specific questions related to the study. Interviewer (I) was flexible by allowing respondents to be free when giving explanations which resulted in obtaining additional and relevant information that was useful for the study. The researcher adopted a lot of semi-structured questions in order to ask for more information. The interviewer used follow-up questions which was essential to obtain more and related information relevant to the investigation.

All interviews were conducted in Amharic; the official language of the Federal Government of Ethiopia and lingua franca of the study area. The data generated by interviews in this research were verbal responses, statements, opinions, interactions of the participants, and non-verbal actions. Observational accounts of nonverbal communication such as tones and facial expressions were noted by taking shorthand notes during the interview, and these were later assessed in terms of making meaning. In addition to shorthand notes, audio recording was used to capture all important data from interviewed participants, and then all audio recorded interview data was transcribed.

The researcher used checklists which were used as a guide for observing important data for the research. But the respondents were not informed about the observation before the researcher went to the actual sites of observation lest artificial data. The researcher went to the actual farms / raising sites that were observed. During this time, the researcher tried to observe how farmers and extension workers communicate on issues of agricultural production and productivity. In addition, the researcher

captured photographs of the discussion between farmers and communication workers for additional data.

Furthermore, the researcher collected different documentary films, programmes, brochures, and flyers that were prepared by communication workers having agricultural messages. After I looked/read those documents using hard copy of printed materials and soft copies with CD/Flash, I tried to interpret their applications for agricultural extension systems and their accessibility to the concerned farmers in the Woreda.

3.5. Data analysis

Data analysis in a research project involves summarising the mass of data collected and presenting the results in a way that communicates the most important features. In the context of this research, the data collected from different sources were qualitatively analysed. After coding communication methods used by farmers and agricultural extension workers, critical analysis was performed using the qualitative data analysis method.

Regarding the case of data analysis, all interviews and observations were recorded both in field notes form and in audio recording. Almost 200 minutes of interview data was obtained from farmers, communication workers, DAs and extension workers in parallel to the notes taken during the discussion. And field observation was done at the agricultural sites using the already prepared observation checklists. During this, field notes and photographs of observed sites were also taken as data. Therefore, these data were organized into simple and related forms to be analysed. Then, all tape recorded data were transcribed into English and the detailed demographic information of informants, the place, and time, were labelled.

A thematic analysis is a strategy that cuts across all the data to group the common issues that persist, and identify the main themes that summarize all the data that were collected. This is the most common method of describing this qualitative research. To arrive at certain themes, explanation and identification of commonly repeated ideas in the same cluster were the major techniques.

The transcripts were explained in both boundaries as a preliminary observation to get the whole aim of the text. During the identification of themes, each of the explained concepts was summarized and fall into one category. The data was classified into different themes according to their nature. Similar data obtained via different tools were clustered under the

same theme and discussed accordingly. As a result, according to their nature, the data was grouped into five major strata in line with the research questions related to access and dissemination of agricultural extension messages, the importance of communication approaches to farmers, the participation of farmers in the use of the new agricultural extension communication process, the dependence of farmers on various agricultural innovations information disseminated, and the communication gaps between development agents, extension workers, and farmers.

4. Data presentation and results

This study examined agricultural extension communication practices among communication workers, extension workers, and DAs in three kebeles of Lalibela. The study was qualitative and involved the explanation and interpretation of results. For simplicity, the long strings of names and response items are coded as follows.

Farmers' Code

IIF1 in-depth interview with farmer one	II F10 in-depth interview with farmer ten
IIF2 in-depth interview with farmers two	II F11 in-depth interview with farmer eleven
IIF3 in-depth interview with farmers three	II F12 in-depth interview with farmer twelve
IIF4 in-depth interview with farmers four	II F13 in-depth interview with farmer thirteen
IIF5 in-depth interview with farmer five	II F14 in-depth interview with farmer fourteen
II F6 in-depth interview with farmer six	II F15 in-depth interview with farmer fifteen
IIF7 in-depth interview with farmer seven	II F16 in-depth interview with farmer sixteen
II F8 in-depth interview with farmer eight	II F17 in-depth interview with farmer seventeen
II F9 in-depth interview with farmer nine	II F18 in-depth interview with farmer eighteen

Communication Workers' Code

IICW1 in-depth interview with communication worker one	IICW2 in-depth interview with communication worker two

Development Agents' and Extension Workers' Code

IIDA1 in-depth interview with Development Agent one	IIDA4 in-depth interview with Development Agent four
IIDA2 in-depth interview with Development Agent two	IIEW1 in-depth interview with Extension Worker one
IIDA3 in-depth interview with Development Agent three	II EW2 in-depth interview with Extension Worker two

4.1. Accessibility of agricultural extension messages for farmers

Investigating accessibility of agricultural extension messages for farmers is one objective of this research. So, according to the data found from IIF1,2,3,5,7,8,9,10,11,12,13,14,16,17 &18, they revealed that:

> Our main sources of information on agricultural extension messages are kebele extension workers. We do not have radio sets and cannot attend different programs transmitted through radio instead of messages being transmitted to us through our one-to-five organizations which are formed in our local areas although our interest in this one-to-five organization is not good for being an active participant. In our one-to-five organization, all agricultural messages are addressed to us through our group representatives.

From these data, we can understand that agricultural messages are addressed to farmers of DAs by their group representatives at the kebele level through the diffusion method of communication.

The researcher also observed that DAs are given responsibilities by woreda extension workers to transmit agricultural messages to farmers without any participation of farmers.

For this similar objective of research, IIF 4, 6 & 15 replied that:

> We find agricultural information from electronic media such as radio and TV. We also find from agricultural workers and DAs within our local meetings, one-to-five organizations, and from informal personal communications with DAs.

Based on the above data that have been found from in-depth interviews with farmers about access and dissemination of agricultural extension messages, the main information sources for farmers are kebele extension workers. Most of the farmers in the study area do not have radios and cannot attend different programs. Farmers also said that they obtain the messages of agriculture in different ways. From this one to five farmers organizations are taken as the good mechanism to disseminate agricultural extension messages.

As farmers explained, the meetings and interactions of extension workers with them were not enough to discuss agricultural activities. During their meetings, they had discussions about their day-to-day activities which affect their agricultural production positively. But, as farmers in the study area asserted, they did not find more relevant agricultural extension messages, which are prepared by Lalibela communication workers.

This idea was not hindered by communication workers themselves. As the researcher forwarded the question about how agricultural extension messages are addressed to farmers in this research area, IICWs 1 &2 responded:

> We tried to create awareness of farmers by producing new ideas which are related to how they addressed agricultural massages they prepared with content of agriculture as: farmers, for instance ploughing repeatedly, spraying chemicals, and using selected seeds, using fertilizer, etc. could be prepared by us (CW) and disseminated through reading groups and TV park groups. But these messages were not enough accessible to all farmers, especially those who could not read those prepared materials may not understand what the messages were. We prepare flayers, brushers, programs, and documentary films.

As can be observed from the documents of the Lalibela communication office, communication workers produced flyers, brushers, government stands, and documentary films and programs.

As it is pointed out in Ponniah et al. (2008) of group methods that involve working with groups or the community at large, extension work can be carried out at meetings, either organized specifically for the selected purpose or by making use of meetings that were already organized for some other purpose. Meetings are effective venues for receiving information from the community, for discussing issues of communal or individual interest, and for spreading new ideas. Field days and demonstrations are best organized on individual farms. In similar way, the communication workers at Lalibela responded that they used TV park groups, radio listener groups, and Reading groups to address agricultural extension messages.

According to Extension workers and Das (II EWs 1& 2), agricultural extension messages are addressed to farmers in this research area as:

> We find extension messages from the higher agricultural experts of zone, and region. And then massages are addressed to farmers by using meetings, farmer days, local groups such as one-to-five (anid le amist) and development group (limat-budin), and other informal ways of social interactions.

According to this data, EWs responded that as they communicate to address new technological messages in farmer meetings, farmer days, and in local farmer group discussions. But they explained that all farmers are not accessible due to low interactions with extension workers.

4.2. Communication approaches used by agricultural extension workers or DAs

In terms of this research objective, the researcher tried to collect data from 'IIF1-IIF18', direct observation of meetings and documents. As 'IIF1-IIF18', we played that:

> We communicate with extension workers and DAs whenever they want to transmit agricultural messages which are planned and generated by woreda experts at the woreda level. With the existing hierarchy, the kebele DAs introduce and give the plan for us by allocating it for each sub-village in collaboration with kebele representatives. Our great responsibilities are listening to them in public meetings and promoting it as our own 'blueprint'. In such a norm, all one-to-five organizations are composed of 5-7 agricultural development armies with their own leaders who share and dictate the members of that particular group about agricultural massages. With this flow, the woreda agricultural plan reaches each farmer vertically.

According to farmers' responses, even communication is very important to exchange extension messages from extension workers, DAs, and communication workers to beneficiary farmers to bring agricultural productivity in this research area, the activities that farmers used are local organizations, such as one-to-five(anid le-amist), development group (limat-budin), and local community(got)interactions. Due to these communication methods, farmers are addressed agricultural extension messages to bring agricultural production and productivity in an inadequate way. As farmers remarked during the interview, no serious activities are taken to persuade them about the agricultural extension program by using communication means such as posters, pamphlets, radio, and television to persuade the public about agricultural extensions either in campaigns or in actual activities of agricultural stakeholders.

In addition to this, results of in-depth interview with farmers showed that the communication among DAs, farmers, CWs, and EWs is largely top-down in which content and agenda are set by CWs or their crew. Even CWs contact with farmers, it is not beyond information sources instead they often use the source of extension messages from agricultural experts, and then they produce that information for farmers. So, farmers are dominated in agricultural communication.

According to Mefalopulos (2008), communication is used to inform audiences about development initiatives, activities, and results, and it is used to transmit information and messages. In the other case, communication is applied to engage stakeholders, assess the situation, and devise effective strategies leading to better and more sustainable development initiatives, which are more than transmitting information, and it is about using communication to generate new knowledge and consensus in order to facilitate change. Although communication has an application for informing agricultural messages, IICWs 1&2 responded as they do not use it well.

> Even our roles in agricultural extension are considered as low, we use TV park viewer groups, reading groups, and radio listener groups as the means of transmissions of our massages. The reasons for this low communication were not only us, but also it lays to DAs and EW. This means that extension workers and DAs do not have a strong chain to collect new ideas that are used for agricultural productivity.

Based on these data, the approaches of communication to increase agricultural productivity were group methods and mass media methods of Ponniah et al. (2008), which involves working with groups or the community at large. Extension workers can do effective activities by receiving information from the community, for discussing issues of communal or individual interest, and for spreading new ideas. In addition, the mass media method is mainly used to create awareness using such media as radio, posters, drama, television, newspapers, films, and slide shows to inform the public. But as the researcher observed from field observation and documents, the communication approaches that are used are none participatory; instead DAs, communication workers, and extension workers were dominant during the communication process.

On the other hand, highlighting the importance of communication approaches for agricultural productivity, IIEWs 1, 2 and IIDAs1-4 expressed:

> We use participatory communication particularly and diffusion approach in some cases to disseminate agricultural extension technologies. Our links with CWs are not enough as expected. In this research area, we use top-down or participatory communication approaches or both to communicate with agricultural stakeholders. These indicate that in interpersonal communication in the study areas,

> the message flows top-down, bottom-up, and horizontally. This is the main feature of a participatory development communication approach.
>
> In addition to these, we work collaboratively with farmers to realize the indigenous knowledge of farmers which experts in agriculture do not know and then try to improve it with new technologies.

With respect to this data, EWs and DAs used both participatory and diffusion communication approaches to work collaboratively with farmers. They identify farmers' problems with farmers to seek solutions, test implementations of solutions, and evaluate the result together.

4.3. Farmers' participation in agricultural extension communication process

To test the idea of farmers' participation, IIF1, 3, 4, 8, 13, 17 & 18 replied to the RQ 'how can farmers be a participant in the agricultural extension communication process?' in that:

> Our participation with extension workers and DAs always serves not only in public meeting, and one-to-five organization, but also we communicate with them when they come through our farm lands and tell them how to implement the plan that is already handed out. Participatory planning is operationalized by woreda experts, even if the missing link is from both zone agricultural development and kebele DAs. As a result, our participation in agricultural decision making is well, even it is limited in our kebele level and local groups. But we are not actively communicating with the communication workers of Lalibela.

As IIF5, 9, 14,6,12 also replied:

> Our meetings and interactions with extension workers and DAs were twice or three times a week. During this meetings, we had discussions about our day-to-day activities which affect our agricultural productivity. But the time of our contact is not enough and the agricultural professionals assigned in our kebele are very few to teach farmers by rounding each farmer's land.

According to the participation of farmers in agricultural communication, there is no extension program that is produced by farmers for farmers. This means that the participation of farmers with communication workers about agricultural messages is low. In relation to this, we can see it from the point of Leeuwi and Ban (2003) who underscored the importance of agricultural

development diffusion. The authors believe that individual farmers can get experiences in farm experimentation and/or training which could be relevant to other farmers. Farmers are aware of this and as a result there are often informal means of farmer-to-farmer exchange of knowledge and information through markets, work parties, funerals, bars, celebrations, community meetings, and church services to talk about agriculture. On the other hand, observation of other farmer practices is also an important mechanism for horizontal exchange. During these agricultural extension communication processes, communication workers can stimulate or help improve farmer-to-farmer exchange in various ways. But as farmers responded that, experience sharing is not well done by communication workers because of low emphasis of agricultural extension diffusion.

They also explained that even if there are few chances that farmers get experience sharing in formal ways by the government once a year, extension workers took the responsibility to select farmers who could take this experience, but the ratio of farmers with experience shared with the other farmers was not balanced to diffuse what they had learned at the time of experience sharing.

In addition to this, farmers explained that their communication with stakeholders is referred to in horizontal or vertical methods. This means that in some parts of their communication, agricultural extension workers participated with beneficiary farmers about extension programmes, and then farmers could get opportunities in decision making about how they have to use extension technologies. In other cases, not only farmers but also extension workers are forced by the government to apply some extension programs which are only believed by higher agricultural experts at federal or region level.

Communication workers also gave their responses about the participation of farmers in the agricultural communication process. So, IICWs1& 2 revealed that:

> Even farmers' participation in mediated extension communication is minimal; they participate in forms of interview, live testimonial communications, and some feature stories. In this regard, we sometimes talk to farmers, but the content to be communicated is decided by us. We sometimes involve both the DAs and farmers in the communication process as informants. For example, by expanding the experience of model farmers to other farmers through discussions with

> extension teams, demonstrations, participation of farmers, and by presenting documentary films prepared on their farms.

As the data from the interview showed, farmers participate in agricultural extension through farmer-to-DA, farmer-to-farmer, farmer-to-EW, and farmer-to-mass audience communications, and through practical methods such as demonstrations, field visits, and experience sharing tours. As indicated earlier, farmers participate more in interpersonal approaches followed by group communication approaches.

McPhail (2009) mentioned that participatory communication deals with a different approach. It rejects the top-down and bureaucratic ways of communication between farmers, extension workers and DAs. These results also suggest that farmers directly participate in extension communication in interpersonal and group methods, but have some participation, which is indirect in the mediated communication. This requires the need to increase current trends in interpersonal and group methods of extension communication while instituting measures that would allow farmers to communicate through electronic media.

Not only farmers and communication workers, but also extension workers and DAs responded to the RQ on how farmers can be a participant in the agricultural extension communication process as follows. IIEWs 1, 2 and IIDAs 1, 3&4 responded that:

> We make farmers to participate in development groups, local administration systems, and one-to-five organization activities in agricultural extension performances, and the content of extension massages is decided by farmers and us, but not always.

Farmers were not well-participating in the content of the agricultural extension messages which are prepared by CWs although they are well-participating in local administration systems, and one-to-five organization activities in agricultural extension performances. Even CWs are interested in preparing and expanding the performances of model farmers to others in the form of documentary film, flyer, brusher, and program; farmers faced difficulties in using those prepared messages because of their illiteracy and lack of electricity in the rural area. This leads to an increment in agricultural productivity.

4.4. Farmers' reliance on disseminated information about agricultural messages

In response to this, the researchers aimed to assess how farmers are dependent on agricultural extension messages, and IIF 1, 7, 10 responded:

> We do not have a serious commitment to use agricultural extension massages, because most of us do not have enough access to use those agricultural extension massages which are prepared by communication workers or extension workers. While extension massages are addressed to us by extension workers and DAs, most of us show our reluctant features about the massages which are disseminated by DAs and extension workers. Because our land is burned by fertilizers, DAs are forcing us to use these new technologies for the purpose of their salary scale up. We do not believe them.

According to farmers' response above, they are reluctant and have a low perception of new agricultural technologies resulting from low communication among extension workers, DAs and farmers. In persuasive transfer of technological innovations, there is an external interaction between communication workers and farmers. The main intervention goal here is to help realise specific objectives by the stimulation of pre-defined behaviour changes. But farmers responded in the contrary to this idea. As farmers explained, they faced major problems to be persuaded about agricultural extension technologies in this research area. Because most farmers depend their farming on rain, it is not easy to convince farmers about sustainable agricultural development is in the context of rain-fed agriculture. Even extension workers and DAs in this research area took their potential efforts to persuade farmers, their interests were not negotiated by them leading to one-way information dissemination disregarding understanding. Instead of relying on two-way communication towards shared meaning, farmers are obliged to use new agricultural extension inputs such as fertilizers, insecticides, and herbicides

On the other hand, IIF 11 & 17 also revealed that:

> We like interpersonal communication with DAs, we consider them like our parents or families; we also accept them when they teach us in groups because this gives us the opportunity to learn from each other. We also ask them to teach us a lot about group communication methods using demonstrations, farm experience models, extension teams, exhibitions, and farm field schools.

As for these data, DAs take responsibilities for empowering farmers' productivity, and they communicate with farmers. But farmers pointed out the lack of good opportunities to meet extension workers and DAs in their local area. Even though these stakeholders come periodically; they could not satisfy farmers' demands.

From the point of view of farmers' reliance on various disseminated information about agricultural messages, communication workers were targeted both in the interview and observation. As II CW1 & 2 responded that:

> Farmers like the participatory communication approach, which is perceived mainly in interpersonal and group communication methods. They readily accept information communicated face-to-face with DAs, extension workers, and us; because this gives farmers the opportunity to interactively discuss problems and solutions about how information is useful for their farming. They develop the sense that they are considered a knowledgeable and active participant and they improve trust that DAs and extension workers are concerned with improving the production and productivity of peasant agriculture.

In this regard, farmers feel balanced when CWs interactively communicate with them, and most likely accept messages communicated to them through interpersonal methods. The data also indicated that interactive communication of farmers is dependent on the communication skills and abilities of the DAs commitment, and on their personality. For example, while EWs are not communicating well with CWs to prepare tangible agricultural extension messages, farmers could not accept the message of DAs.

As the additional response from the CWs, farmers do not often accept extension messages communicated through the mass media due to limited access to television and print materials. This leads farmers to have less interest and less trust in media messages due to lack of farmer voices in the programs and makes them dependent on DAs for extension information.

In general the results of the above data gained from CWs showed that the current communication approach which is expressed in terms of interpersonal and group communication methods is not accepted enough by farmers. They also pointed out that it is less accepted in the case of mass media methods.

IIEW 2 also replied for the RQ 'How is the level of farmers' reliance on various disseminated information about agricultural messages'? That:

> I am reluctant to say that all farmers accept extension technologies. But there are few farmers who are active in implementing new technologies in contact with us and DAs to use new technologies such as fertilizers, insecticides, and weed chemicals. To persuade all farmers to use extension technologies, we use different organizations starting from woreda extension stakeholders to grass root farmers. This is carried out through the means of persuading woreda extension stakeholders and then move to persuade kebele level administrators to farmers.

According to data, the participation of farmers in the production of agricultural extension messages is very low. As a result, the reliance of farmers on agricultural messages is also low. On the other responses of EW and DAs to conduct research, they indicated that no audience research has been conducted on the acceptability of the approach in terms of the mass method in this research area.

4.5. Communication gaps between development agents, extension workers, and farmers

According to FDRE (2012), large stocks of personnel trained in agricultural development at various educational levels are essential to establish and expand modern commercial farms and the productive capacity of small farmers. Although maximum effort is being made to train agricultural researchers, extension personnel, and animal health experts, services to farmers' have not been enough to improve agricultural production methods and technologies. This has its own reason in different views, what farmers responded in connection to the communication gaps among DAs, EWs, and farmers are presented below. As IIF 7, 8, 10.13.16 & 18, revealed that:

> DAs, extension workers, and we work collaboratively. We consider DAs as participants, risk-takers, and activists rather than assuming themselves to be experts, supporters, and nonparticipants. We do not consider DAs as our supervisors and currently DAs start working with our groups starting from problem identification to researching, testing of results, variety selection, and related activities. They also have continuous communication with us and they help a lot for the agricultural sector, even if it is difficult to say that we are food sufficient. Even DAs, EWs and we work collaboratively; we (farmers) have communication problems in relation to the shortage of DAs in kebele, lack of awareness to adopt new technologies, lack of communication methods, and lack of education.

As can be understood from the above quote, farmers in the research area witnessed that DAs communicatively assist farmers during the agricultural processes from land preparation up to the production phase. But as a result of the minimum number of DAs in the kebele, all farmers could not find the assistance of Das as required.

On the contrary, IIF 7,8,10, 17, said that:

> Our communication practice with extension workers, DAs and communication workers is not good. Because there are serious communication problems particularly faced with agricultural extension workers, and DAs while interacting with us. These communication problems result from the lack of extension communication to shift from the traditional top-down approach to the contemporary participatory approach. Due to this, we lost our decision on our own farm, and were forced by DAs to use new extension inputs without our consensus.

Here we can understand that, as the dominant paradigm, the communication system is one way and farmers could not have the opportunity to communicate DAs and EWs about the agricultural activities they are concerned about. Participatory communication was not applied instead agricultural professionals diffuse ideas/messages about what farmers should do on their own farm lands. As Mefalopulos (2008) explained, during this paradigm, communication was associated with the dissemination of information and messages aimed at modernizing people by using mass media as the centre of communication initiatives that relied heavily on the traditional vertical one-way model. Even agriculture and Ethiopia are mentioned as two sides of the same coin in FDRE (2012), uneducated farming population, limitations in using modern technologies, and low assimilating of new ideas because of illiteracy to absorb extensive information about sustained transformation in agricultural practices are still problems.

According to the data obtained from the II CWs 1&2:

> There are communication gaps, such as the low concept of communication for agricultural production and productivity; unintegrated performance of EWs, DAs, and we; lack of transport access go to farmers in remote places; lack of access to print many flyers, brushes, to prepare and disseminate documentary films and programs; lack of thrust among EWs, DAs, and we; and lack of farmer understanding resulting from their illiteracy. Because of this, we cannot say that farmers are available to use our works to be productive.

As the CWs pointed out, even model farmers involved in extension communication have little experience of sharing to the wider farming community. As a result, communication among extension workers, DAs, and farmers with communication workers is minimal.

Furthermore, IIEWs 1, 2 & IIDAs 1-4 replied that:

> We work closely with farmers and facilitate them on how they can plough their farms, use new technologies, and raise livestock. During this, we face different problems such as: lack of farmer commitment to perform what they ordered; farmers disagree with us when we order them to accept new technologies; lack of access to address all farmers concerned.

As can be understood from the above quote, extension workers and DAs, woreda extension workers act as collaborators, participants, risk-takers, and activists rather than assuming themselves to be experts, supporters, and nonparticipants. However, the communicative approaches among woreda extension workers and DAs at the kebele level are not effective for agricultural extension. The top-down (diffusion) approach of communication is assumed to be the reason for communication gaps. This is to mean when extension workers from the woreda are considering themselves more highly positioned than DAs from the kebele, there is disrespect for each other, and DAs are led to be disobedient for their duties and responsibilities of extension activities.

However, the results did not deny that the extension information is available from different sources. The weakness of the linkage among the different components of the agricultural system may create information gaps, and thus the different sources may not share different information on the same issue.

5. Discussion

According to the data presented and analysed, communication is considered vitally important for agricultural extension activities. It is used to inform and aware farmers about new agricultural technologies, skills, knowledge, and relevant farming systems for more agricultural improvement. The data in this study showed that the communication approach used in the study areas is a mix of both non-participatory and participatory approaches. Thus, it tends to be an integrated approach. However, the integration is mainly not in the sense of adjusting the approach of communication in a given method

according to contexts, but is largely in the sense that the approach in using some methods is mostly participatory whereas the approach in using other methods is mostly non-participatory. The data gained from CWs, DAs, farmers, and EWs witnessed about the shortage of accessibility of messages to the beneficiary farmers, and activities were carried out through designed campaigns, which could not bring a sizable change on agricultural development. And also the relationship between the agriculture office and the communication office was very low; even they know that communication is important for agricultural production and productivity.

In accordance with communication vitality for agricultural production, different communication theories were discussed in this research, especially participatory communication and diffusion of innovation communication are used to evaluate how agricultural communication is practiced at Lalibela.

Hence, the participatory communication and diffusion communication approaches are applied, even though both of them have their own limitations and strengths. Regarding this, the agricultural extension communication practices are considered as top-down in most cases because the data showed that the agricultural information is transmitted from the federal level to the regional level and to the end users through the hierarchy of different levels/from top to bottom. As a result of these top-down communications, the end users/farmers are dominated to take share about their agricultural performances. This also led to low agricultural accessibility due to the lack of enough pre-information about what farmers use. This is related to Rogers (1983) explaining that communication is used to disseminate innovative ideas to farmers, and other farmers also share information with one another about agricultural production and productivity. During this dissemination of new ideas, diffusion communication theory plays an important role.

As the presentation and analysis of the data obtained from the observations showed, the communication practices of the farmers with the extension workers and Das. Some farmers participated in farmer meetings, and local organizations. As Leeuwi and Ban (2003) explained, the key function of communication workers in disseminating new technologies is to facilitate the process and it is important to work toward a balance between new technical devices and new social–organisational arrangements. Some farmers, on the other hand, were passive participants in meetings and they did not understand what the extension workers/DAs wanted to transmit, rather they seemed bored listening to the messages of the meeting and they

talk with their peers while the EWs tell them the message on agricultural production.

As to Castello and Braun (2006), agricultural advisory services are expected to disseminate new technologies among their clients. The role of communication workers here is to integrate farmers, agricultural educators, researchers, extension workers, and the private sectors by addressing information from various sources for better farming and better livelihoods. But, as farmers in the study area asserted, they did not find more relevant agricultural extension messages, which are prepared by Lalibela communication workers. The photograph showing how farmers were participating in their meetings with EWs and DAs can be seen in the Appendix.

Farmers are less mobilized to use new agricultural extension technologies because, in our observation, we saw that most small-scale farmers use indigenous farming systems instead of using new technologies and new farming systems. Even EWs and DAs use their potential to persuade farmers to use agricultural extension inputs.

According to the view point of Leeuwi and Ban (2003) of advisory communication, the role of the communication workers is based on consultation or consolation, depending on whether the emphasis is on providing knowledge or process guidance. For the adequate provision of these kinds of services, it is particularly important that communication workers have or have not access to relevant kinds of know-how, and that they have adequate skills to stimulate the needs and expectations of farmers. Furthermore, the most widespread form of communicative intervention is to persuade farmers or other target groups to adopt specific technological packages and certain ideas or policies. Mefalopulos (2008) also mentioned that communication is used to inform farmers about development initiatives, activities, and results. In this case, it is used to transmit information and messages, and generate new knowledge and consensus in order to facilitate agricultural change. Both are important and require a different body of knowledge and a different set of skills.

According to my observation of the communication approaches that EWs and DAs use, both participatory and diffusion communication approaches are used. As diffusion approach dictates, EWs and DAs tried to diffuse some extension ideas to farmers; for instance, they let farmers to use fertilizers and insecticides without pre-informed nature of communication.

In addition to interview and observation, the researchers tried to present and analyze the data which were collected by using document analysis such as programs, flyers, government stands and brushers, which were prepared by communication workers. Therefore, the documents showed that the communication workers, DAs and EWs were part of the materials. DAs and farmers were interviewed about agricultural production in the prepared program. On the other hand, when CWs prepare model farmers' work through flyers, brushers, and stands, they included the farmers' activities and the ways how they could be productive. However, the documents which were prepared by CWs have limitations with regards their contents because they have unattractive contents, prepared with low initiative by CWs, and with less consultation of most farmers in agricultural extension communication network. It is difficult to conclude that documents which are prepared by communication workers are available for communicating farmers, EWs, and DAs. Even communication workers prepare as much as they can, farmers were not accessible due to the lack of access to electricity in the rural area and lack of reading skills whenever they obtain written materials such as flyers.

6. Conclusions

As already mentioned, the study evaluated communication practices of agricultural extension in Lalibela woreda. The main objectives of the study were to explore communication practices on aspects of agricultural extension in Lalibela.

To achieve this, qualitative data was used to assess farmer, DA and EW communication practices and challenges in the context of agricultural production and productivity. Regarding instruments of data collection, in-depth interview, observation, and document analysis were used as the major instruments.

The sample kebeles were selected on the basis of the available sampling technique. Accordingly, it was found that the practice of agricultural communication was mainly dominated by woreda extension workers in general and by DAs in particular. The interaction between farmers, CW, DAs, and EWs was inappropriately implemented. Since the knowledge or awareness of farmers, CW, DA, and EW about the importance of practicing communication was very low. And it was also found that most farmers in the study areas have no access to radio sets. But there were some radio listener groups that are expected to share and exchange agricultural

extension messages. These groups were organized and facilitated by communication workers; Messages contented with agricultural extension could be addressed to them to improve their agricultural production.

The practices of agricultural extension communication were dominantly diffusion (one way); therefore, the techniques and approach of the participatory communication approach were not used effectively.

Generally, Lalibela's agricultural communication practice entailed an inappropriate concept of development communication; lack of collaborative learning initiatives in development communication and natural resource management, a lack of direct participation of farmers in radio programs, a mistrust of farmers in extension messages communicated through mass media, inattention of farmers to extension messages communicated through flyers, programs, brushers and documentary films, low access to radio sets to share and exchange agricultural extension messages, a top-down communication approach in which agricultural messages are diffused from woreda level to individual farmers with less farmer participation and illiterate farmers to read and understand agricultural extension messages. Due to these problems, the agricultural extension practices of Lalibela woreda were considered low and recommended to use integrated participatory agricultural extension communication approaches.

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Conflict of interest

The author(s) declare that there is no conflict of interest.

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