

Full Length Research Paper

Sources of information and information seeking behavior of smallholder farmers of Tanqa Abergelle Wereda, central zone of Tigray, Ethiopia

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Smallholder farmers have different information seeking behaviors which are changing through time. However, as far as the authors' knowledge is concerned, there is no research carried out to identify it in the study area. Therefore, this research is to reveal the information seeking behavior of the Abergelle woreda smallholder farmers. For the research design, from the 19 rural kebeles of the woreda, 5 kebele were randomly selected and 152 household head were selected by using simple random sampling technique proportion to their population size from the sampled kebeles. The study adopts both primary (household survey and focus group discussions); and secondary data sources (relevant published and unpublished materials). To analyze sources of information and information seeking behavior of the smallholder farmers, frequency and ranking were employed. The findings revealed that smallholder farmers prefer to seek information from farmers, agricultural professionals, health extension workers, radio and mobile-phone. The main challenges for seeking information, among others are shortage of infrastructure, lack of ICT and service fee, lack of interest and inadequate users' skill and knowledge. It is concluded that smallholder farmers' use multiple sources of information as no one source is sufficient in itself. Finally, it is advisable to repackage agricultural information into various formats to meet smallholder farmers' information seeking behavior.

Key words: Information seeking behavior, smallholder farmers, Tigray, Ethiopia.

INTRODUCTION

Agriculture is an information-intensive industry (Rutger, 2000). The livelihood of the population of Ethiopia is

highly dependent on the performance of agriculture. Agriculture contributes 42.7% to GDP, about 80% of

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employment and 70% of export earnings (MoFED, 2013). Agriculture contributes 42.7% to GDP, about 85% of employment and 70% of export earnings (CSA, 2015). As most of the people in Ethiopia depend on agriculture, agricultural knowledge and information are the basic ingredients for increasing production as well as development in the country.

Information is power and an important working tool for the advancement of human and society (Apata and Ogunrewo, 2010). According to Malhaam and Rao (2004), knowledge and information have become significant factors for production of goods and services. And, the future of food security in the developing world is increasingly becoming dependent more on information and knowledge than inputs (IFPRI, 2004). The demand for agricultural production is growing from time to time but the land for cultivation is fixed while the population size of the study area is increasing; therefore, improving the productivity of the land through application of new methods of farming and technologies is crucial. In this new information age, information is becoming the key factor for agriculture production more than natural resources, cheap labor and financial capital (World Bank, 1992). Equally, vibrant communication on new ideas and technological innovations for the improvement of agricultural production and productivity is crucial as well.

Habtemariam et al. (2015) reported that rural farmers transfer their knowledge to their neighbors, friends, relative and children mainly through informal discussion, experience sharing and inviting other farmers to visit their own farms. Sources of agricultural information in the study area can be categorized as organizations and individuals. The individual information sources are development agents (DA), extension experts, model farmers, elders, neighbors, friends, relatives, agricultural researchers, health extension workers and administrators. Among others, organizations like *wereda* OoARD, Abergelle Agricultural research center, Mekele universities, Axum University and ILRI are indicated as sources of agricultural information for smallholder farmers in the study area as well.

Ethiopian government gives more emphasis on the five year growth and transformation plan in improving the agriculture sector to continue as the main engine of the national economy. One of the strategic pillars stated under the GTP II, is to increase productive capacity and efficiency to reach the economy's productive possibility frontier through rapidly improving quality, productivity and competitiveness of agriculture (MoARD, 2015). To make the plan real, the government is giving more emphasis to transfer information on best agricultural practices to smallholder farmers. Information dissemination resulted from the recognition of smallholder farmers needs to lead to innovativeness in solving existing agricultural problem. Information gap keeps rural people stagnant and they cannot participate actively in the process of agricultural

production and productivity improvement.

Information is an important factor in the sustained development of any society since getting the required information on time helps to reduce uncertainty and improves the quality of decision made in solving agricultural problems. In this information society, information and knowledge play a key role in ensuring sustainable development (Koutsouris, 2010). Farmers' information seeking behavior is hindered by its poor relevance, usefulness and lack of technical advice for follow-up (Babu et al., 2011). Information seeking behavior is an essential component in the designing and developing of need based information sharing technique to meet the information needs of users. Without adequate information, particularly to the rural smallholder farmers, there might be lack of information on agricultural innovations. Lack of access to needed information by smallholder farmers reduces information seeking behavior of smallholder farmers.

In Tigray region in general and Tanqua Abergelle *Wereda* in particular, there is shortage of location specific empirical studies that deal with smallholder farmers' sources of information and information seeking behavior. This underscores the importance of conducting research on the topics in smallholder farmers in the study area. In the study area, productivity of agriculture score in research organization and model farmers is by far more than the productivity of agriculture run by majority of the smallholder farmers. The existing Ethiopian government shows commitment to narrow the productivity gap scored between model and fellow farmers through scaling up and scaling out of best agricultural practices. In the study area, the production and productivity of agriculture is still low.

Information has been identified as an important resource for smallholder farmers. Having acknowledged the importance of information resources, the management of Tanqua Abergelle *Wereda* has invested so much to ensure smallholder farmers' access to timely and relevant agricultural information by employing agricultural development workers, health extension workers, mass media and public leaders found at different levels. However, in Tigray in general and Tanqua Abergelle district in particular, there are no previous studies carried out on the analysis of sources of information and information seeking behavior of smallholder farmers. Therefore, the overall objectives of the study were to: identify and analyze sources of information and the information seeking behavior of the smallholder farmers; and to explore the challenges that the smallholder farmers experienced when they sought information in the study area.

MATERIALS AND METHODS

Tanqua Abergelle *woreda* is located in Central zone of Tigray

Regional State. The study area is located about 120 km west of Mekele, the capital city of Tigray region, and at a distance of 900 km far away from Addis Ababa, the capital city of Ethiopia. According to the current administrative division, the woreda is sub divided into 19 rural kebele and one urban kebele administrations. The bordering areas of the woreda are kola-Tembien woreda in the north, Saharti-Samre woreda in the south, Degua-Tembien woreda in the east and Nadier-Adiet woreda and Amara Region to the west. The topography location of Tanqua Abergelle woreda is found in kola (below 1, 800 m.a.s.l) and Weina dega (1,800 to 2,400 m.a.s.l). According to this classification, Tanqua Abergelle Woreda is located within two of these topographic regions. That is about 95% of the total land area of the Woreda is estimated to be in the Kola topographic region whereas, the remaining 5% lies in the Weina Dega. According to OoFED (2014) projected estimation, the population of the woreda is about 110,499 of which about 56,339 (50.99%) are male and the remaining 54,160 (49.01%) are female. The wereda has about 24,661 household. In sex ratio, 19,337 (78.41%) are male headed household and 5,324 (21.59%) are female headed household.

The predominant economic activity in Tanqua Abergelle is agriculture. The agriculture system is a mixed farming, which includes both crop production and livestock rearing. Out of the 144,864 ha land area about 31,417.5 ha is cultivable (OoARD, 2014). Smallholder farmers of the study area get information from agricultural information sources. The individual agricultural information sources are DA, extension experts, model farmer, elders, neighbors, friends, relative, agricultural researchers and different level of public leaders. And, the respondents get agricultural information from organizations like wereda OoARD, agricultural research, university and NGOs.

The sample size was specified based on Yamane (1967) simplified formula. The formula adopted 95% confidence interval to the determination of representative sample. When the formula is applied, the sample size of the study was specified into 151.764 and when it rounded up to 152. To select representative sample, the study adopted two stage sampling technique. In the first stage, out of 19 rural kebeles in the study wereda, five rural kebele were selected randomly. In the second stage, a total sample of 152 small households were selected randomly by using probability proportionate to size from each of the sampled kebele. Looking at the uniformity of the response of the focus group discussions, the researcher limits the number of focus group discussion into ten.

The study used both quantitative and qualitative types of data, through primary and secondary data sources. The collection of primary data was carried out on 2016 by interviewing sample household heads and focus group discussion. The study used well reviewed semi-structured questionnaire and checklist. Secondary data were collected from relevant published and unpublished documents. This study employed descriptive statistical analysis methods; mainly frequency, ranking and percentages were employed. The statistical analysis for the study was carried out by using stata version 12.1.

RESULTS AND DISCUSSION

Information seeking behavior of smallholder farmers

This section focuses on analysis of sources of information and information seeking behavior of smallholder farmers. Table 1 demonstrates the information need of farmers on agricultural tools. Smallholder farmers seek information from personal

extension workers (78.9%), woreda agricultural extension experts (57.2%), family (51.3%), farmers development group members (45.9%), friends and neighbors (37.5%), cell phone (26.3%), conference and meeting (21.7%), radio (29.6%), printed materials (22.4%), cooperatives (17.1%), different level of administrative members (19.7%), agricultural researchers (7.2%), demonstration and field days (10.5%) and agricultural input suppliers (5.3%). Such dependency of farmers on many information sources is similar to that of Ekoja (2010) who concluded that it is difficult to find common sources of information for all people in developing regions of the world.

The result of this study indicated that smallholder farmers use information seeking behavior to make decision whether to intensify their farming and use agricultural technologies. Most of the rural farming households were highly dependent on non-formal information sources like personal experience, family, village meetings, friends and neighbors, farmer groups and model farmers in their day to day decision making process. These findings are similar to those of other studies on agricultural information seeking behavior (Lwoga et al., 2011; Boz and Ozcatalbas, 2010). In the second level, farmers seek information from agricultural workers like DA, subject matter specialist (SMS) and agricultural researchers. In the third level, they also use traditional and modern information and communication technologies (ICTs), mostly radio and mobile phone (Balarane and Oladele, 2012).

Table 2 also indicated that the results of the focus group discussion conducted with men and women based groups. Men focus group discussants also ranked agricultural professionals as the first and most important sources of information to smallholder farmers, whereas the women based focus group ranked neighbors and friends as the first source of information to farmers. Men and women focus group discussants had also differ in ranking their sources of information where the former group ranked neighbors/friends, development groups of farmers, family, model farmers, radio, cell phone, government administrative bodies, conference and meetings, printed materials, cooperatives and television in their order of importance.

The experiences of extension demonstrate that television and cooperative organizations play important role in transfer of information from the source to the end users. Yet, they have contributed little to inform the smallholder farmers in the study area. This little contribution might be due to low access to rural electrification and farmers who head the cooperative organizations might also have low level of understanding of information about modern technologies, like ICTs. On the other hand, women focus group discussants ranked neighbor, development group of farmers, health extension workers as their main sources of information in

Table 1. Source of information for smallholder farmers.

Sources of information used for accessing agricultural information by smallholder farmers	Household heads searched	
	No.	%
Extension agents	120	78.9
Agriculture extension officers	87	57.2
Family	78	51.3
Farmer development groups	69	45.4
Neighbors and or friends	57	37.5
Model farmers	56	36.8
Radio	45	29.6
Cell phones	40	26.3
Printed materials	34	22.4
Conference and meeting	33	21.7
Training	30	19.7
Different level of administrative members	30	19.7
Cooperatives	26	17.1
Demonstration	16	10.5
Television	11	7.2
Agricultural researchers	11	7.2
Health extension workers	11	7.2
Input suppliers	8	5.3
Farmers research group	7	4.6

Multiple responses were allowed.

Table 2. Result of FGDs ranking information sources searched by rural farmers.

Information sources	Rank	
	Men's group	Women's group
Extension experts (DA, SMS, and age researchers)	1 st	4 th
Neighbors and or friends	2 nd	1 st
Farmer development groups	3 rd	2 nd
Family	4 th	5 th
Model farmers	5 th	9 th
Radio	6 th	8 th
Cell phones	7 th	7 th
Different level of administrative members	8 th	5 th
Conference and meeting	9 th	6 th
Printed materials	10 th	-
Cooperatives	11 th	10 th
Television	12 th	11 th
Health extension workers	-	3 rd

descending order. They also mentioned that health extension workers have played important role to inform women farmers in the area. The women discussants ranked government administrative bodies, conferences and meetings; cell phone, radio, model farmers, cooperative organizations and television in order of their importance to inform women farmers in particular and the

local society in general.

Purpose of information seeking

The result in Table 3 revealed that, as smallholder farmers usually seek information from different

Table 3. The purpose of information seeking among the smallholder farmers.

	Response		Rank
	No.	%	
Get advisory on how to use improved technologies	99	81.15	1
Accessing reliable and more timely information	16	13.11	2
Improve the quality of decision making	7	5.74	3
Total	122	100.00	

Multiple responses were allowed.

agricultural information sources. They used it to bridge the information gap they face to overcome agricultural production constraints. The sampled smallholder farmers showed that the information they gathered from multiple sources has been used to get advisory on modern agricultural technologies usage (65.1%), search reliable and more timely on current issue (10.5%) and help them make decision on which technology (or crop variety and livestock breeds) to use for agricultural production and productivity improvement (4.6%).

Farmers’ satisfaction level with the available information sources

Figure 1 shows that smallholder farmer’s satisfaction level with the available agricultural information sources. The fact that information determines success or failure of any business entity in the 21st century, is very important to transfer useful agricultural information to end users (or smallholder farmers) in order to enable them improve their agricultural productivity. Likewise, users should have good information seeking behavior to fulfill their information needs. The farmers were asked if they are satisfied with information sources in supplying demand driven, timely and accurate information. This finding is in line with Meitei and Devi (2009) who reported that rural farmers are not getting the right information at the right time, leading to slow development of agricultural activities. The rural farmers responded to the question in three different levels namely, highly (25), medium (56.58) and low (18.42) satisfied level.

Challenges smallholder farmers faced when they seek information

Table 4 summarized all the challenges experienced while smallholder farmers search relevant information. The sampled smallholder farmers responded to the main problems they countered to gather important information. The result demonstrates that smallholder farmers were facing infrastructure shortage (power), lack of money to

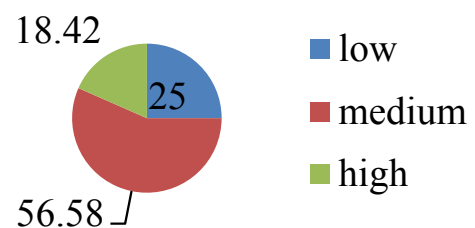


Figure 1. Farmer’s satisfaction with information source.

buy mobile phone, radio and service fee, lack of interest, incompatible format where the information is packed, and maintenance problem. Similarly, the findings revealed that there is lack of timely and locally specified information, users’ inadequate knowledge and skills on how and where to access the required information and distance of information source (Table 4). The results are also supported by Chachhar and Hassan (2013), Mohammed (2014) and Miwanda et al. (2014) research findings showing that many developing countries face lack of infrastructure and service delivery from government.

Conclusions and recommendations

Information contributes a key role in enhancing agricultural production and productivity in the study area. Identifying sources of information and information seeking behavior of smallholder farmers is helpful to inform information service providers on what strategies to adopt for agricultural information dissemination and the improvement of agricultural productivity by applying relevant information. The smallholder farmers seek information mostly from non-formal information sources, extension workers, and administrative bodies found at different levels, and ICTs. The information seeking behavior of farmers were challenged by low rural electrification, lack of money to buy ICTs apparatus and pay service fees, poor information packaging and low

Table 4. Challenges facing smallholder farmers in seeking agricultural information.

Challenges	Households affected		Rank
	No.	Percentage	
Infrastructure shortage(power)	81	53.29	1
Shortage of money	64	42.11	2
Shortage of interest	30	18.73	3
Format in which the information is packaged	19	12.5	4
Maintenance problem	19	12.5	4
Shortage of locally specified information	19	11.85	4
Inadequate users knowledge	18	11.85	7
Distance to the information sources	15	9.87	8
Maintenance problem	7	4.61	10
Shortage of timely delivered information	4	2.63	11
Low capacity of the information sources	3	1.97	12
resources of the model farmers and ours is imbalance	2	1.32	13
Work overload	1	0.66	14

Multiple responses were allowed.

level of smallholder farmers' skill in using modern ICTs tools for searching agricultural information purpose.

Based on the conclusions drawn, the study recommends that government and nongovernmental institutions have to work to effectively and efficiently to enhance rural electrification. Moreover, repackaging of agricultural information into simple and understandable language and promoting modern ICTs makes a difference in overcoming barriers that smallholder farmers are facing in seeking relevant agricultural information in the study area.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interest.

REFERENCES

- Apata IG, Ogunrewo JO (2010). Analysis of Traditional Information Dissemination and Communication Method among Rural Farmers: Evidence from Traditional Communities in Nigeria: *Scientific and Technical Information and Rural Development, IAALD Xillth World Congress*, Montpellier.
- Babu SC, Glendenning CJ, Asenso OK (2011). Farmers' information needs and search behaviours: Case study in Tamil Nadu, India. Pp 1-53. Available at: <http://ageconsearch.umn.edu/handle/126226>
- Balarane A, Oladele OI (2012). Awareness and use of agricultural market information among small scale farmers in Ngaka Modiri Molema District of North West Province. *J. Life Sci.* 9(3):57-62.
- Boz I, Ozcatalbas O (2010). Determining information sources used by crop producers: A case study of Gaziantep province in Turkey. *Afr. J. Agric. Res.* 5(10):980-987
- Chachhar AR, Hassan MS (2013). Information Communication Technology for Agriculture Development. *J. Am. Sci.* 19(1):85-91.
- CSA (Central Statistics Agency) (2015). The federal democratic republic of Ethiopia, Agricultural Sample Survey 2015, Addis Ababa, Ethiopia.
- Ekoja II (2010). Personal variables affecting the adoption of Agricultural Innovations by Nigeria Farmers. *South Afr. J. Agric. Ext.* 33(1):94-107.
- Habtemariam A, Tegegni GE, Azage T (2015). Agricultural knowledge management: The case of cattle feed quality improvement in Bure district west Gojjam, Ethiopia. *J. Agric. Ext. Rural Dev.* 7(1):1-7.
- IFPRI (International Food Policy Research Institute) (2004). Knowledge and Finance for Education in Sub-Saharan Africa. London, Bingley.
- Koutsouris A (2010). The emergence of the intra-rural digital divide: A critical review of the adoption of ICTs in rural areas and the farming community. In 9th European IFSA Symposium. Vienna pp. 23-32.
- Lwoga ET, Stilwell C, Ngulube P (2011). Access and use of agricultural information and knowledge in Tanzania. *Libr. Rev.* 60(5):383-395.
- Malhaam IV, Rao S (2004). Impact of Globalization and Emerging Information Communication Technologies on Agricultural Knowledge Transfer to Small Farmers in India. World Library and Information Congress: 73rd IFLA General Conference and Council 19-23 August 2007, Durban, South Africa.
- Meitei LS, Devi TP (2009). Farmers' information needs in rural Manipur: an assessment. *Anal. Libr. Info. Stud.* 56:35-40.
- Miwanda A, Kabaale E, Mayoka KG (2014). Using ICTs to disseminate Agricultural Marketing Information to Small Scale Rural Farmers in Western Uganda. *Int. J. Innov. Appl. Res.* 2(12):64-73.
- MoARD (Ministry of agriculture and rural development) (2015). Growth and transformation plan (2015/16-2019/20), Addis Ababa, Ethiopia.
- MoFED (Ministry of finance and economic development) (2013). National Income Accounts; Available at: www.mofeddatabase.com.
- Mohammed Y (2014). The Role of ICTs for Good Governance and Agricultural Development in Ethiopia: Local Evidence from Southern Ethiopia. *Int. J. Polit. Sci. Dev.* 3(1):30-39.
- OoARD (Office of Agriculture and Rural Development) (2014). Annual report on livestock population size of Tanqua Abergelle woreda, Unpublished document.
- OoFED (Office of Finances and Economic Development) (2014). Annual report on projected population size of Tanqua Abergelle woreda, unpublished document.
- Rutger JE (2000). Technical policy and institutional trends in information and communication: proceedings of a CTA Seminar.
- World Bank (1992). Policy research bulletin 3(1). Washington, DC: <http://documents.worldbank.org/curated/en/1992/02/442587/>.
- Yamane T (1967). *Statistics: An Introductory Analysis*, 2nd Ed, New York: Harper and Row.