

Empowering Women Farmers in Tanzania Through Communication for Development

Robert Agunga¹, Camilius Aloyce Sanga² & Elizabeth Isaya^{3*}

¹Department of Agricultural Communication, Education and Leadership, Ohio State University 2120 Fyffe Road, Columbus, Ohio 43210, USA

²Centre for ICT, Sokoine University of Agriculture, Morogoro, Tanzania

³Department of Information and Communication Technology, The Open University of Tanzania, Kinondoni, Dar es salaam, Tanzania

*Correspondence: Department of Information and Communication Technology, The Open University of Tanzania, Kinondoni, Dar es salaam, Tanzania. Tel: 255-718-450-390. E-mail: lizdelucs@gmail.com

Received: January 17, 2018 Accepted: March 12, 2018 Online Published: June 22, 2018

doi:10.5430/wjss.v5n2p8 URL: <https://doi.org/10.5430/wjss.v5n2p8>

Abstract

African women play a major role in the development and industrialization of the continent. They account for up to 80% of household food production by smallholder farmers. In spite of their large numbers, African women generally do not have access to agricultural production resources, such as land and credit. Their access to land is often through their husbands and fathers and usually loses their property rights as a consequence of widowhood, divorce, or desertion. This study of women farmers in Tanzania argues that farming is the main source of livelihood for women and the key to their empowerment. The study, therefore, examines how communication or access to information, can serve as the vehicle for women farmers' empowerment in Tanzania.

Keywords: empowerment, communication for development, women farmers

1. Background Information

African women play a major role in the development and industrialization of the continent. Mucavele (2017) notes that women are the backbone of the development of many rural and national economies, comprising 43% to 70% of the labor force, depending on the country. She adds that in rural Africa, women account for up to 80% of agricultural production by small holder farmers (Guèye, 2000). In spite of their large numbers, however, African women generally do not have access to production resources, such as land and credit. Their access to land is through their husbands and fathers; they often lose their property rights as a consequence of widowhood, divorce, or desertion (Lastarria-Cornhiel, 2009). This study of women farmers in Tanzania argues that farming is the main source of livelihood for women and the key to their empowerment. The study, therefore, examines how communication or access to information, can serve as the vehicle for women farmers' empowerment in Tanzania.

Tanzania typifies countries in the continent of Africa. Agriculture is the main economy, providing food for the country's estimated 42 million population and serving as a means of livelihood for over 80 percent of the people (URT, 2013). The vast majority of rural farm workers in Tanzania and in Africa are women and, therefore, agriculture serves as their main source of livelihood and the springboard for their economic empowerment (Leavens and Anderson, 2011). Women in Tanzania are involved in a wide range of agricultural activities—from crop and livestock production to fetching firewood as a source of energy for preparing the family meal (Ellis, 2007). In this study, we examine women's agricultural activities and their sources of information for adoption of agricultural innovations (Leavens and Anderson, 2011).

1.1 Objectives

The overall objective for the study was to examine the operation of women farmers as a means of gaining economic and social empowerment. The specific objectives were:

- i. To examine the characteristics of women farmers in Tanzania;
- ii. To examine the innovative farming practices of women farmers;
- iii. To assess women farmers' access to agricultural extension services;
- iv. To examine the use of ICTs by women farmers; and
- v. To examine the challenges facing women farmers in gaining access to farm inputs.

2. Methodology

This study used survey research. It was conducted in June 2014 among women farmers in Morogoro and Kilimanjaro regions, two of 28 regions of Tanzania. They were chosen mainly out of convenience, that is, easy access to the researchers who were based at Sokoine University of Agriculture in Morogoro. The Morogoro region has six districts and only one, Kilosa district, was chosen for the study. The same went for Kilimanjaro region with seven districts, and only Hai district was chosen for the study (URT, 2013). Figure 1 is a map of Tanzania showing the study areas. According to the 2012 national census, Kilosa district had a total population of 438,175 with females numbering 219,797 (URT, 2013). Kilosa district is divided into 35 wards and 10 wards were randomly selected. The Hai District also had a 2012 population of 210,533 of whom 108,076 were female (URT, 2013). The district has 14 wards and six were randomly selected.



Figure 1. Map of Tanzania Showing the Study Area: Morogoro and Kilimanjaro Regions (Source: Google Map: https://gpglobalea.gp.psu.edu/_customtags/ct_Image.cfm?Image_ID=19351)

Also, 150 respondents from each district were interviewed. The reason for this selection was due to resource limitations. Thus, in total only 300 women farmers were interviewed. 25 women per village in Hai district and 15 per village in Kilosa district formed the sample. An interview schedule was used for data collection. Six assistant interviewers were trained as data collectors and three were assigned to each district. They worked individually and used motorcycles to move from ward to ward. The interviewers also spoke English and Kiswahili, the national language, spoken by virtually everyone in the country. The questionnaire was developed in English and the questions *ad lipped in Kiswahili* to interviewees and recorded in English for data processing.

Validity of the instrument was assessed by a panel of experts. Validity determines whether the instrument for data collection measures what it was supposed to measure (Joppe, 2000). Reliability also deals with the consistency of measurement (Severin & Tankard, 2014). The reliability of the instrument was improved through pilot testing. Also, the research statistic of Cronbach's Alpha was used to assess the internal consistency of Likert-scale questions that were used to evaluate the awareness of ICTs by the respondents. An alpha coefficient of 0.7 was obtained, which is ruled "acceptable" (George and Mallery, 2003). Statistical Package for Social Sciences (SPSS) was used for data analysis.

3. Findings

The findings of the study are reported based on the research specific objectives. The first specific objective examined the demographic characteristics of the women farmers. Demographics are important because it examines how a given population breaks down in terms of age, economic ability, educational levels, and a host of other parameters. Understanding demographic characteristics of rural women, such as the type of crops they grow and their incomes, can help extension workers better serve them. The other specific objectives were; to examine the innovative farming practices of women farmers; to examine women farmers' access to and use of agricultural extension services; to examine the use of ICTs by women farmers; and to examine the challenges facing women farmers and their belief systems.

3.1 Demographic Characteristics of Women Farmers

a. Age: The first demographic characteristic examined was age. In Kilosa district, the majority of women farmers were between the ages of 30-41, that is in their prime. Of the 150 respondents, 26 (17.2%) were between the ages of 18-29; 61 (40.4%) were between the ages of 30-41; 43 (28.5%) were between the ages of 42-53, 19 (12.6%) were between the ages of 54-65, 2(1.3%) were between the ages of 66-77. However, the women in Hai were relatively much older. The majority of them were between the ages of 42-53. Of the 138 respondents, 23 (16.8%) were between the ages of 18-29; 37 (27%) were between the ages of 30-41; 46 (33.6%) were between the ages of 42-53; 20 (14.6%) were between the ages of 54-65; 10 (7.3%) were between the ages of 66-77; and 1 (0.7%) was between the ages of 78-89. Overall, it would seem that many women were in their prime, meaning they had the energy it takes to do manual labor in the fields.

b. Marital status: Marital status is important because it indicates a level of responsibility these women have and the need to support the livelihoods of their members. Out of 150 respondents in Kilosa district, more than half were married (58.3%); 25 (16.6%) respondents were single; 13 (8.6%) cohabitated, 88 (58.3%) were married, 12 (7.9%) were divorced and 13(8.6%) were widowed. In Hai district, more than three quarters of the respondents was married (80.3%). Out of the 138 respondents, 12 (8.8%) were single, 2 (1.5%) were cohabitated, 110 (80.3%) were married; 5 (3.6%) were divorced; and 8 (5.8%) were widowed. It appeared that the majority of the respondents in both districts were married and thus, had a responsibility to earn adequate income to support their families.

c. Size of household: Following from the above, many respondents do not live alone but in families—nuclear and extended families. In Kilosa district the majority of respondents had 4-6 people in their households (62.9%); followed by 1-3 (19.2%); 7-9 (15.2%); and 10-12 (2.6%). The situation was similar in Hai district where 56.9% of the respondents had 4-6 people in the household; followed by 22.6% had 1-3; 16.8% had 7-9; and 3.6% had 10-12 people living with them. The average number of people in a household was 7. It would seem that the population is characterized by large family sizes.

d. Education: Throughout the world, education is a major determinant of the type of work one does and one's level of income. Overall, 265 (92%) had attended school while 23 (8%) had not. Of those who attended school, 37 (12.8%) started but did not complete primary school, 189 (65.6%) completed primary school; 6 (2.1%) started but did not complete secondary school; 22 (7.6%) completed secondary school; and 11 (3.8%) completed vocational school. Therefore, it can be seen that the majority of respondents had elementary level education or can master a few words

in English.

In Kilosa district, 137 (91.3%) respondents had been to school while 13 (8.7%) had not. Of the 137 (91.3%) respondents who went to school, 16 (10.7%) respondents started but did not complete primary school; 112 (74.7%) respondents completed primary school; 1 (0.7%) respondent did not complete secondary school; 8 (5.3%) completed secondary school and none completed vocational school. In Hai district, 128 (92.8%) respondents had been to school while 10 (7.2%) had not; 21 (15.2%) started but did not complete primary school; 77 (55.8%) completed primary school; 5 (3.6%) started but did not complete secondary school; 14 (10.1%) completed secondary school; and 11 (8%) completed vocational school.

e. Possessions

Possessions are considered as a form of wealth. Women farmers were asked to indicate possessions they owned as in Table 1.

Table 1. List of Possessions

			Kilosa	Hai
Hand hoe	Yes	Freq.	147	131
		Per. (%)	98	94.9
Ox-plough	Yes	Freq.	0	8
		Per. (%)	0	5.8
Back pack sprayer	Yes	Freq.	19	35
		Per. (%)	12.7	25.4
Tractor	Yes	Freq.	37	37
		Per. (%)	24.7	12.8
Bicycle	Yes	Freq.	101	57
		Per. (%)	67.3	41.3
Vehicle	Yes	Freq.	2	4
		Per. (%)	1.3	2.9
Motorcycle	Yes	Freq.	11	16
		Per. (%)	7.3	11.6
Electricity	Yes	Freq.	39	59
		Per. (%)	26	42.8
Bank account	Yes	Freq.	8	37
		Per. (%)	5.3	26.8

From Table 1, virtually all respondents owned a hand hoe, the main tool for cultivating the land. A small number reported ploughing their farms using a tractor. Also, a few respondents possessed clocks, vehicles and motorcycles. A big difference was noticed in the possession of ox-plough whereas none of the respondents in Kilosa owned one. Many respondents in Hai district owned backpack sprayers (25.4%) as compared to respondents in Kilosa (12.7%). Many respondents in Kilosa had electricity in their homes (42.8%) and many also owned bank accounts (26.8%) as compared to Kilosa district where 26% had electricity at home and only 5.3% owned bank accounts. Also many respondents in Kilosa had bicycles (67.3%) while only 41.3% of the respondents in Hai had bicycles. Thus, bicycles appear to be a popular means of transportation for these women farmers.

f. Sources of energy for household use, water and sanitation

Table 2 shows the forms of cooking energy that women farmers use. Not many respondents used gas and kerosene for cooking because they are expensive. Kerosene is mostly used for lighting.

However, the majority of respondents used charcoal and wood, which are readily available in the rural areas, for

cooking. Wood is particularly used because the women don't have to process it into charcoal. If the use of gas for cooking is an indicator of development then, Hai is more developed than Kilosa because many more people use gas for cooking but the difference is minimal

Table 2. Energy for Cooking at Home

			Kilosa	Hai
Gas	Yes	Freq.	2	15
		Per. (%)	1.3	10.9
Kerosene	Yes	Freq.	7	48
		Per. (%)	4.7	34.8
Charcoal	Yes	Freq.	126	35
		Per. (%)	84	25.4
Wood	Yes	Freq.	110	124
		Per. (%)	73.3	89.9

The last set of demographic indicators we examined were access to piped water and the type of sanitation practiced. If these are considered indicators of development then, again, Hai district is more developed. Many more respondents have in-house piped water systems and have flushing toilets. Kilosa district appeared more rural as it is characterized by more grass-roofed houses, fewer flush toilets, more community water supply and more use of well water (Table 3).

Table 3. Water and Sanitation

			Kilosa	Hai
In house piped water	Yes	Freq.	19	51
		Per. (%)	12.7	37
Community piped water	Yes	Freq.	93	75
		Per. (%)	62	54.3
Water from the well	Yes	Freq.	48	8
		Per. (%)	32	5.8
Flushing toilet	Yes	Freq.	20	40
		Per. (%)	13.3	29
Family latrine	Yes	Freq.	80	92
		Per. (%)	53.3	66.7
Grass roofed house	Yes	Freq.	11	3
		Per. (%)	7.3	2.2
Aluminum roofed house	Yes	Freq.	99	129
		Per. (%)	66	93.5

g) Farm ownership

Women farmers were asked whether they owned farms. The results were as shown in the Table 4. In Kilosa district 94% of the respondents owned farms while in Hai district 85.4 percent had farms.

Table 4. Farm Ownership

	Yes		No	
	Freq.	Per.	Freq.	Per.
Kilosa	141	94	9	6
Hai	246	85.4	42	14.6

The farms owned by these women do not necessarily mean that they bought the lands. Some women had rented farms, bought farms, inherited farms while others were given land by their families. The statistics of how they obtained the farm lands is shown in the Table 5.

Table 5. Types of Land Ownership

	Bought		Rented		Inherited		Given	
	Freq.	Per.	Freq.	Per.	Freq.	Per.	Freq.	Per.
Kilosa	44	29.3	63	42	34	22.7	9	5.7
Hai	20	14.5	36	26.1	55	39.9	8	6.1

h) Incomes

Kilosa district had 73.3% of respondents with annual incomes of 100,000 to 600,000 TSH (45 to 270 USD), 6% with incomes of 700,000 to 1,200,000 (315 to 540 USD), and 8% with incomes of above 4,900,000 TSH (2205 USD). Hai district on the other hand had 65.2% of respondents with income levels of 100,000 to 600,000 TSH; 1.4% with incomes of 700,000-1,200,000 and 2.2% with incomes above 4,900,000 TSH. These figures indicate that Kilosa district had respondents with more income than Hai district. This could be attributed to the fact that Kilosa district is close to Dar es Salaam, a large market for agricultural produce.

3.2 Innovative Farming Practices

Farming in Tanzania is characterized largely by subsistence, that is, many families produce mainly for home consumption with very little sold. About 80% of Tanzania agriculture is subsistence (Leavens and Anderson, 2011). Therefore, we were interested in examining whether Tanzanian women farmers operate as business, mostly for sale, or for subsistence? Have they adopted modern farming methods or do they still practice rudimentary farming, such as use of traditional seed and no chemical fertilizer?

With respect to adoption of improved farming methods, the study found that women farmers in both districts used improved seed varieties (Table 6). About 220 (76.7%) respondents used improved seed varieties while only 67 (23.3%) did not. Hai district respondents have adopted the use of improved seed varieties more than in Kilosa. Other innovative practices include use of ox-plough, ploughing with a tractor and use of chemical fertilizer.

Table 6. Seed Varieties Used in Kilosa and Hai Districts

	Improved				Local			
	Yes		No		Yes		No	
	Freq.	Per.	Freq.	Per.	Freq.	Per.	Freq.	Per.
Kilosa	103	68.7	47	31.3	57	38	93	62
Hai	117	85.4	20	14.6	14	10.2	121	88.3

The study showed that adoption of the ox-plough is still at its infancy. In both districts, only 18 (6.3%) respondents used the ox-plough for cultivation while 269 (93.7%) did not. The results show more than half of the respondents used tractors for cultivation, 198 (69%) while 89 (31%) did not. Respondents with farm sizes ranging from two acres and above mostly used tractors for land preparation. In reference to Table 1, few farmers owned tractor. Therefore,

tractors are often rented from individuals or the local government. The frequency for hand hoe, ox-plough and each district is shown in Table 7.

Table 7. Cultivation Methods Used in Kilosa and Hai Districts

	Hand hoe		Ox-plough				Tractor					
	Yes	No	Yes	No	Yes	No	Yes	No				
	Freq.	Per.	Freq.	Per.	Freq.	Per.	Freq.	Per.				
Kilosa	140	93.3	10	6.7	4	2.7	146	97.3	102	68	48	32
Hai	83	60.6	54	39.4	14	10.2	123	89.8	96	70.1	41	29.9

The use of chemical fertilizer, such as nitrogen fertilizers or sulphate of ammonia, is another measure of women farmers' innovativeness. In Kilosa district, almost three quarters (81.3%) of respondents did not use fertilizer, claiming it was too expensive. Others felt the soil on their pieces of land was fertile and so they did not need to apply fertilizer. Still, others had the belief that fertilizer makes their land unproductive in the long run. Unlike Kilosa, many respondents (70.8%) in Hai district used fertilizer. In summary, it would seem that women farmers in the study were more innovative as they adopted improved seed, fertilizer and modern systems of land preparation, such as the tractor. This finding concurs to a study by Reij and Waters-Bayer (2014) who found that African farmers are adopting innovative farming practices.

3.3 Sources of Information on Modern Farming Methods

This specific objective aimed at determining what information sources women farmers' use. The main information sources were television, radio, cell phones, newspapers, neighbors, fellow farmers and local government officials (Table 8). Local government officials, such as, village or ward officers, were also used as a source of agricultural information. In Kilosa district, 2 (1.3%) respondents got information from local government officials while 148 (98.7%) did not. In Hai district, 35 (25.4%) of the respondents get agricultural information from the local government officials while 103 (74.6%) did not. Overall, 37 (12.8%) of the respondents in both districts get information from the local government officials while 251.

Table 8. Sources of Agricultural Information Used by Women Farmers

Source of agricultural information	Kilosa		Hai		Overall	
	n	%	N	%	n	%
Television	39.0	26.0	43.0	31.2	82.0	28.5
Radio	87.0	58.0	96.0	69.6	183.0	63.5
Newspaper	3.0	2.0	16.0	11.6	19.0	6.6
Neighbors	58.0	38.7	61.0	44.2	119.0	41.3
Farm input distributors	2.0	1.3	22.0	15.9	24.0	8.3
Extension agents	70.0	46.7	96.0	69.9	166.0	57.6
Local government officials	2.0	1.3	35.0	25.4	37.0	12.8
Fellow farmers	39.0	26.0	54.0	39.1	93.0	32.3
Farmers training institutes	4.0	2.7	19.0	13.8	23.0	8.0

(87.2%) did not. Communication among fellow farmers serves as another source of agricultural information for women farmers. In Kilosa district, 39 (26%) respondents shared information with their fellow farmers while 111 (74%) did not. In Hai district, 54 (39.1%) respondents shared agricultural information with fellow farmers while 84 (60.9%) did not. When considering all the districts, 93 (32.3%) of the respondents shared agricultural information with other farmers while 195(67.7%) did not.

Farmers training institutes are located in many districts and serve as another source of agricultural information for farmers living nearby. These training institutes are government or privately owned. In Kilosa district there is a government agricultural institute called Ministry of Agriculture Training Institute (MATI Ilonga) and Ilonga Agriculture Research Institute where farmers get field training (Daniel, 2013). In Kilosa district, 4 (2.7%) of the respondents said they got information from farmers training institutes while 146 (97.3%) respondents did not. In Hai district, 19 (13.8%) respondents get information from farmers training institutes while 119 (86.2%) did not. Overall, farmers training institutes constituted a minute source of agricultural information for respondents.

Television as a source of agricultural information: A small number of respondents in Kilosa used television for acquiring agricultural information. This concurs to results from a study by Mtega (2012). Television is a limited source of information because of lack of electricity in rural areas. Also, many rural folks cannot afford television sets. Additional reason is that there are few TV programmes geared toward agriculture farming. There were 39 (26%) respondents in Kilosa district who used TVs for acquiring agricultural information while 111 (74%) did not. In Hai district, 43 (31.2%) of the respondents used TV while 95 (68.8%) did not. In both districts, 82 (28.5%) respondents used TVs for accessing agricultural information while 206 (71.5%) respondents did not.

Radio for acquiring agricultural information: A large number of respondents used radio for acquiring agricultural information. Radio sets are readily affordable and convenient to use because dry cell batteries are readily available and reasonably inexpensive. Also, Kilosa District has Kilosa Community radio while Hai district has Boma Hai radio (Sanga et al., 2013). In addition, farmers' listen radio via their mobile phone. Furthermore, both districts have been involving in a Farmers' Voice Radio project which aims at using community radio to improve coverage of extension service (Sanga et al., 2014a). In Kilosa district, 87 (58%) respondents used radio for accessing agricultural information while 63 (42%) respondents did not. While in Hai district, 96 (69.6%) respondents used radio while 42 (30.4%) did not. Overall, 183 (63.5%) respondents in Kilosa and Hai districts used radio for acquiring agricultural information while 105 (36.5%) did not.

Newspapers for acquiring agricultural information: In Kilosa district, 3 (2%) of the respondents used newspapers for agricultural information access while 147 (98%) of the respondents did not. In Hai district, 16 (11.6%) respondents used newspapers while 122 (88.4%) respondents did not. Newspapers in Tanzania are expensive and, therefore, unaffordable by rural people. The cheapest newspaper costs about 500Tshs, enough to buy food for the family for a day. Also, another factor which might hinder rural farmers in acquiring agricultural information in newspaper is that there are few featured stories about agriculture (Ogessa & Sife, 2017). Overall, 19 (6.6%) respondents used newspapers for acquiring agricultural information while 269 (93.4%) did not.

The use of neighbors as sources of agricultural information: In Kilosa district, 58(38.7%) respondents used their neighbors for getting agricultural information while 92 (61.3%) of the respondents did not. On the other hand, 61 (44.2%) respondents in Hai district use their neighbors while 77 (55.8%) respondents did not. In both districts, 119 (41.3%) respondents used their neighbors for agricultural information while 196 (58.7%) did not.

3.4 Agricultural Extension Agents as Source of Information for Women Farmers

Women farmers were asked to indicate their association with agricultural extension workers as sources of farming innovations. In Kilosa district, almost half of respondents mentioned extension agents as a source of their agricultural information; 70 (46.7%) respondents used extension agents while 80 (53.3%) did not. In Hai district, however, 96 (69.9%) of the respondents got agricultural information from the extension agents while 42 (30.4%) did not. In both districts, more than half of the respondents 166 (57.6%) got their information from extension agents while 122 (42.4%) did not.

The respondents were further asked to state whether their extension agents were male or female. In Kilosa district, more than 50% of the respondents were serviced by female extension workers; 83 (55.3%) female extension worker, 53 (35.3%) male extension workers while 14 (9.3%) did not know their extension workers. The situation was different in Hai where many male extension agents were observed; 76 (55.1%) male extension workers, 61 (44.2%) female extension workers while 1 (0.7%) respondent did not know her extension worker. Overall, many female extension workers (49.8%) were observed as compared to male extension workers (45.2%) in both districts. Literature shows that male extension workers are in large numbers as compared to female extension workers (Due, Magayane and Temu, 1997; Mwaseba, 2005). Since the sample for this study is not representative, it is difficult to ascertain whether the situation is the same in other districts in Tanzania.

The number of times that a woman farmer was visited by an extension worker for the past year was recorded and the results are shown in Figure 2. From the Figure 2, it can be observed that in Kilosa district many farmers were not

visited by their extension workers (the blue column); while in Hai district a high frequency is observed for women farmers who were visited more than five times in the past year. On visiting the farmers, the extension worker either gave advice on choosing new seed varieties or brought some printed materials to the farmers. Mostly, the extension workers gave advice to the women farmers depending on their needs. This is similar to a study done in Kilosa District by Kyaruzi et al. (2010).

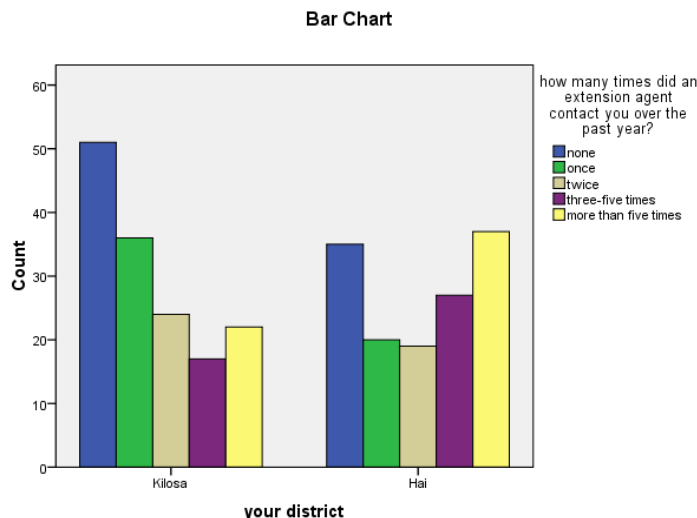


Figure 2. Number of Times a Woman Farmer Was Contacted by an Extension Agent

Male vs. female extension worker preference

Respondents were also asked whether they preferred working with female or male extension workers. In Kilosa district, many respondents preferred female extension workers while in Hai district the gender of the extension agent didn't matter. Overall, 15.3% respondents preferred male extension workers while 33.3% preferred female extension workers and 51.4% had no preference. These results are similar to findings by Due, Magayane and Temu (1997). In that study, they found that 40% of women farmers preferred working with female extension agents compared to 26% who preferred male extension agents. The remaining 34% had no preference.

Those who preferred working with female extension workers believed that they were more comfortable talking to their fellow women than to male extension workers. However, those who preferred working with male extension workers noted that the men were more hardworking and willing to help. Overall, respondents believed that the gender of the extension agent made a difference—it created a harmonic situation and for good communication. This is also observed in a study done in Kilosa district by Kyaruzi et al. (2010).

3.4.1 Extension Service Awareness

The respondents were asked if they were aware of the extension service offered by the Ministry of Agriculture, Food Security and Cooperatives and President's Office Regional Administration and Local Government (PORALG) and the results were as follows; 123 (82%) respondents in Kilosa district said yes they were aware while 27 (18%) were not aware. In Hai district, 120 (87%) respondents were aware while 18 (13%) were not. In both districts, 243 (84.4%) respondents were aware of the extension service offered by the Ministry of Agriculture, Food Security and Cooperatives and PORALG while 45 (15.6%) respondents were not.

3.4.2 Knowledge of Their Extension Workers

Women farmers in the study were asked if they knew who their extension workers were (Table 9). In both districts, 255 (88.5%) of the respondents said yes, 32 (11.1%) of the respondents said no while 1 (0.7%) respondent was not sure.

Table 9. Knowledge on Their Extension Workers

			Do you know your extension worker?			Total
			yes	no	not sure	
Your district	Kilosa	Count	135	14	1	150
		% in your district	90.0%	9.3%	.7%	100.0%
	Hai	Count	120	18	0	138
		% in your district	87.0%	13.0%	.0%	100.0%
Total		Count	255	32	1	288
		% in your district	88.5%	11.1%	.3%	100.0%

3.4.3 Pay for Extension

The respondents were asked if they would pay extension workers for their services. Many respondents (55.9%) in both districts said they won't pay them because these extension agents are being paid by the government already. Others said simply that they do not have money to pay extension workers.

This findings is different from our recently study results from Kilosa District which shows that farmers are willing to buy mobile vouchers in order to communicate to extension workers via agro-advisory system called 'UshauriKilimo' (Sanga et al., 2016a).

3.5 Women Farmers' Access and Use of ICTs

This specific objective was aimed at examining whether Tanzanian women farmers had entered the information age, where by cell phones had become the main source of information. In particular, we examined women farmers' access to Information and Communication Technologies (ICTs), such as mobile phones, the Internet and social media.

Ownership and access to a mobile phone: More than 80% of the respondents owned and had access to mobile phones in both districts. In Kilosa district, 86.7% of respondents owned and had access to mobile phones while in Hai district 86.1% respondents owned and had access to mobile phones. Most respondents (60.1%) bought their own mobile phones while 21.9% of respondents were given phones by their husbands or relatives. Most respondents owned their phones for over a year but hardly used them for accessing agricultural information. They mostly used their phones for communication with relatives and friends. A very small number of people (7.7%) used their mobile phones to call their extension workers for assistance. This is different from a study done in Kilolo district in Iringa region which found that farmers who used mobile phones to access agricultural market information were empowered to have better bargain power for the price (Nyamba & Mlozi, 2012). Inline with this, Government and development partners have started motivating farmers and other actors to use mobile phone to access agricultural knowledge and information. For example in Kilosa District more than 1000 farmers have been involved in pilot project which aim at using mobile phones to improve coverage of extension service (Sanga et al., 2016b).

Access to Internet at home: Very few respondents had access to internet in their homes. Overall, 4 (1.4%) respondents in both districts had internet at home while 284 (98.6%) respondents did not. The distribution in each district was observed as follows; in Kilosa district, only 1(0.7%) respondent had access to the internet while 149 (99.3%) did not have internet. In Hai district, 3(2.2%) respondents had internet while 135 (97.8%) did not.

3.6 Women Farmers' Challenges

It is believed that women in some parts of Tanzania can neither talk to male strangers nor they talk to male extension workers. Women farmers in the study were asked if their culture forbade them from talking to male strangers/extension agents. The results were as shown in the Table 10;

Table 10. Culture Forbid Women from Talking to Male Strangers

	Does your culture forbid married women from talking to male strangers?		Total
	yes	No	
Kilosa	1	149	150
	.7%	99.3%	100.0%
Hai	15	123	138
	10.9%	89.1%	100.0%
	16	272	288
	5.6%	94.4%	100.0%

As it can be seen in Table 10, more than 80% of women in both districts said no; their culture do not forbid them from talking to male strangers. Also, the respondents were asked whether their husbands did forbid them from talking to male extension workers for farm information. The results were as shown in the Table 11.

Table 11. Woman Farmer Communicating with a Male Extension Agent

	Will your husband disapprove if he found you communicating with a male extension worker for farm information?				Total
	Yes	no	I don't know	it has never happened so I can't tell	
Kilosa	3	141	3	3	150
	2.0%	94.0%	2.0%	2.0%	100.0%
Hai	5	133	0	0	138
	3.6%	96.4%	.0%	.0%	100.0%
	8	274	3	3	288
	2.8%	95.1%	1.0%	1.0%	100.0%

The observation is that if women are not talking to male strangers it is for a number of reasons: For example, in one of the villages in Hai district, many people are Muslims and while Muslim women are not forbidden from talking to male strangers their husbands generally do not approve.

Lastly, the study examined the main challenges facing women farmers and their participation in farming group activities.

Land ownership: Contrary to our expectation, the vast majority of women in the study sample did not find land ownership as a problem. More than 70% of the respondents in both districts agreed that women do own land, 23.3% of the respondents said no while 0.3% did not know. The results show that, many women in Kilosa (88%) do not own land as compared to women (63.8%) in Hai district. When the respondents were asked why women don't own land in their areas, they gave reasons such as; the culture does not allow women to inherit land while others said that some women do not have the money to buy land.

Agricultural field training attendance: Training to farmers in agriculture is generally offered by extension workers, other government officials or Community based Organizations (CBOs), Faith based Organizations (FBOs), Non-Governmental Organizations (NGOs). The number of respondents who reported that they attended field training was 112 (38.9%) while 176 (61.1%) did not. Women in Hai district who attended field trainings one or more times were 44.2% as compared to that 34% in Kilosa. Many women were not aware that such training was being offered. Others said they were overwhelmed with household chores to attend. Still others complained of the distance to the training centers and the lack of transport. Also, sometimes the training required them to spend a night or two at the training center but with no housing (accommodation) allowance and other provisions made for them.

In order to address some of these challenges both districts under this study have radio programs in agriculture (Sanga et al., 2014b). These programs are being aired by farmers themselves to promote adoption of innovation being broadcasted.

Membership in agricultural organizations: In the two districts, 160 (55.6%) respondents belonged to one or more women's groups while 128 (44.4%) did not belong in any associations. Hai district had a large number of women who belonged to one or more women's groups than in Kilosa district. Table 3 shows membership status of women in agricultural groups (associations).

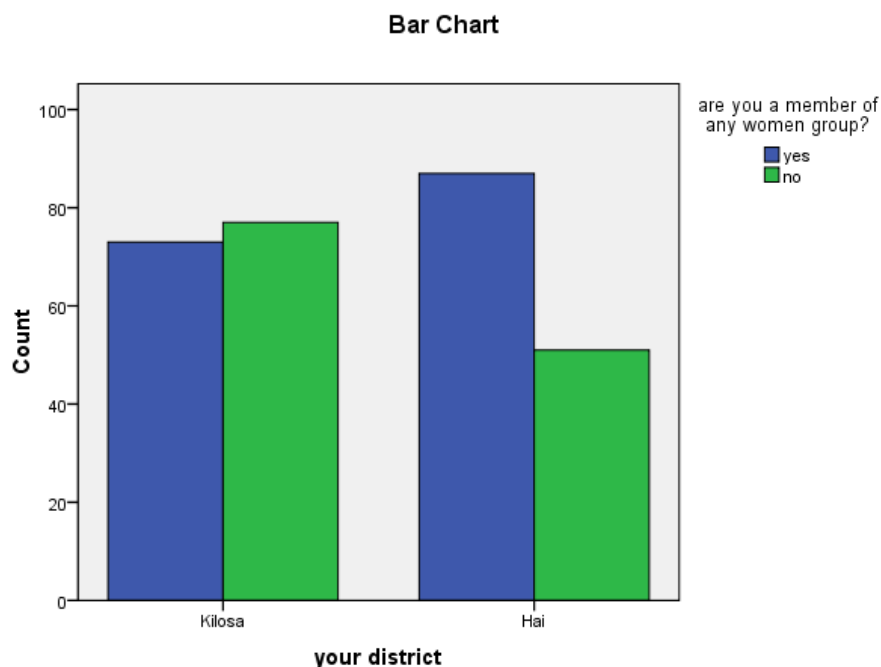


Figure 3. Women Group Membership

Also women were asked whether they belonged to some agricultural groups. Few women noted that they engaged in agricultural women's groups. They were organized to perform agricultural activities (e.g. growing vegetables) and keeping animals (e.g. cows for milk and chicken for eggs). The essence of probing if women farmers belong to a farming group was to assess how farming innovations were adopted. Literature review indicates that farmers can adopt or farming technology can be transferred easily when they are in group (Kadigi, 2013).

4. Conclusions and Recommendations

The study set out to examine women's occupation in farming as a source of economic and social empowerment. By owning their own farms, gaining access to farming innovations techniques and controlling their own incomes agriculture offers a means of empowerment for African women. Women work on the family farm and the produce from it is used to feed the family. However, produce from their own farmers is for them to use it whichever way they see fit. Thus, their farms are for commercial purposes while the family farm is for subsistence.

We found that women farmers depend heavily on extension workers as the main source of information on agriculture. This differs from male subsistence producers who complain that they lack access to extension (Shausi, Agunga & Erbaugh, 2016). Again, our findings may be biased because of a small and skewed sample size. Radio ranked highest as a source of agricultural information, followed by extension agents. Many households have radio sets and dry cell batteries or even solar powered radio sets are available and thus, radio is a popular means of disseminating agricultural information to women farmers. It is also significant to learn that women farmers depend on their husbands who receive information from inputs suppliers and pass it on to them. It suggests that husbands support their wives owning their own farms. There are several reasons why men support their wives' owning farms. First, when women harvest a lot from their farmers they are able to use it to buy their needs and do not have to depend on their husbands. Mothers also use their incomes to take care of their children's needs further reducing dependence on the men. Far more important, when the family harvest is inadequate in feeding the family, the women augment using produce from their own farms.

Another interesting finding was that women farmers have access to cell phones but do not use it to access agricultural information. This may be because many countries in Africa do not have agro-advisory and extension systems whereby farmers can use them while searching for agricultural knowledge and information. This study showed that women farmers adopt modern farming methods, such as improved seed, use of tractor for ploughing, and use of fertilizers. It would seem that when governments establish agricultural “call in” centers, women farmers will patronize these to improve their farming systems.

Lastly, although women farmers in this study seemed to play down on it, a major challenge women farmers’ face in Tanzania and across Africa, is access to land (Mutangadura, 2004). Therefore, access to land becomes a fundamental resource to women's economic empowerment. Through effective communication, women should mobilize to petition their governments and traditional rules for access to land not only as a means to improving their economic condition and that of their families but more so as a fundamental human right.

References

- Daniel, E. (2013). Assessment of Agricultural Extension Services in Tanzania. A case study of Kyela, Songea Rural and Morogoro Rural Districts, *Agr. Syst.* 130(2014), 105-115. <https://doi.org/10.1016/j.agsy.2014.07.003>
- Due, J.M., Magayane, F., & Temu, A.A. (1997). Gender Again – Views of Agricultural Extension Officers by Smallholder Farmers in Tanzania. *World Development*, 25(5), 713-725. [https://doi.org/10.1016/S0305-750X\(96\)00129-5](https://doi.org/10.1016/S0305-750X(96)00129-5)
- Ellis, A., Blackden, M., Cutura, J., MacCulloch, F., & Seebens, H. (2007). *Gender and Economic Growth in Tanzania. Creating opportunities for women*. Washington, D.C.: The World Bank.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon
- Guèye, E. F. (2000). The role of family poultry in poverty alleviation, food security and the promotion of gender equality in rural Africa. *Outlook on agriculture*, 29(2), 129-136. <https://doi.org/10.5367/000000000101293130>
- Joppe, M., (2000). The Research Process. Retrieved February 25, 1998, from <http://www.ryerson.ca/~mjoppe/tp.htm>
- Kadigi, R. M. (2013). Use of participatory farmer group model to transfer agricultural technology: Is it making any difference in the Tanzanian agriculture. *Journal of Renewable Agriculture*, 1(6), 113-122. <https://doi.org/10.12966/jra.09.02.2013>
- Kyaruzi, A.A., Mlozi, M.R.S., & Busindi, I.M (2010). Gender Based Effectiveness of Agricultural Extension Agents’ Contacts with Smallholder Farmers in Extension Services Delivery: A Case of Kilosa District, Tanzania. *Journal of Continuing Education and Extension*, 3(2), 85-93.
- Lastarria-Cornhiel, S. (2009, November). Women’s role in agriculture and in rural welfare: access to land and resources. In *Expert Group Meeting, “The Impact of the Implementation of the Beijing Declaration and Platform for Action on the Achievement of the Millennium Development Goals,”* United Nations, Geneva, November (pp. 11-13).
- Leavens, M.K., & Anderson, C.L. (2011). Gender and Agriculture in Tanzania, Prepared for the Policy & Statistics Team of the Bill & Melinda Gates Foundation Retrieved from http://evans.washington.edu/files/UW_EPAR_Request_134_Gender%20and%20Ag_04102011.pdf
- Mtega, W. P. (2012). Access to and usage of information among rural communities: A case study of Kilosa District Morogoro Region in Tanzania. *Partnership: The Canadian Journal of Library and Information Practice and Research*, 7(1). <https://doi.org/10.21083/partnership.v7i1.1646>
- Mucavele, S. (2017). Women, Gender and Development, *Republic of Mozambique - Southern Africa*. Retrieved from <http://www.wfo-oma.org/women-in-agriculture/articles/the-role-of-rural-women-in-agriculture.html>
- Mutangadura, G. B. (2004). *Women and Land Tenure Rights in Southern Africa: A Human Rights-based Approach*. Lusaka: United Nations Economic Commission for Africa.
- Mwaseba, D.L. (2005). Impact of Agricultural Research: A Study of On-Farm Development Effects of Agricultural Research in Southern Highlands and Eastern Zones of Tanzania. Norwegian University of Life Sciences, Department of International Environment and Development Studies (Noragric).
- Nyamba, S. Y., & Mlozi, M. R. (2012). Factors influencing the use of mobile phones in communicating agricultural

- information: A case of Kilolo District, Iringa, Tanzania. *International Journal of Information and Communication Technology Research*, 2(7).
- Ogessa, C. M., & Sife, A. S. (2017). Newspaper coverage of agricultural information in Tanzania. *University of Dar es Salaam Library journal*, 12(1), 12-26.
- Reij, C., & Waters-Bayer, A. (Eds.). (2014). *Farmer innovation in Africa: a source of inspiration for agricultural development*. Routledge.
- Sanga, C., Mlozi, M., Haug, R., & Tumbo, S. (2016a). Mobile learning bridging the gap in agricultural extension service delivery: Experiences from Sokoine University of Agriculture, Tanzania. *International Journal of Education and Development using Information and Communication Technology*, 12(3), 108.
- Sanga, C. A., Philipo, J., Mlozi, M. R., Haug, R., & Tumbo, S. D. (2016b). Crowdsourcing platform 'Ushaurikilimo' enabling questions answering between farmers, extension agents and researchers. *International Journal of Instructional Technology and Distance Learning*, 10(13), 19-28.
- Sanga, C. A., Tumbo, S. D., & Mlozi, M. R. (2014a). System design and ICT adoption in agricultural extension services delivery in Tanzania. *Technology development and platform enhancements for successful global e-government design*, 282-306.
- Sanga, C., Kalungwizi, V. J., & Msuya, C. P. (2014b). Bridging gender gaps in provision of agricultural extension service using ICT: experiences from Sokoine University of Agriculture (SUA) Farmer Voice Radio (FVR) Project in Tanzania. *International Journal of ICT Research and Development in Africa (IJICTRDA)*, 4(1), 1-19. <https://doi.org/10.4018/ijictrda.2014010101>
- Sanga, C., Kalungwizi, V. J., & Msuya, C. P. (2013). Building an agricultural extension services system supported by ICTs in Tanzania: Progress made, Challenges remain. *International Journal of Education and Development using Information and Communication Technology*, 9(1), 80-99.
- URT, (2013). 2012 Population and Housing Census. Population distributed by areas. National Bureau of Statistics Ministry of Finance Dar es salaam, Office of Chief Government Statistician President's Office, Finance, Economy and Development Planning Zanzibar.