

Analysing Social-Demographic Differences in Accessing and Using Agricultural Information Services in Tanzania

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Abstract

This paper analyses the influence of social-demographic features in accessing and using agricultural information services among small-scale crop farmers in Tanzania. The survey approach was adopted. The study involved 150 small-scale crop farmers from Rukwa region. A combination of qualitative and quantitative research methods was used. Data was systematically collected. Questionnaires were used to collect data supplemented by interview and observation. Chi-square analysis was used to determine the significant factors affecting access to and use of agricultural information services. The results were cross-tabulated against social-demographic features of respondents. The findings show that social-demographic characteristics of respondents such as age, gender, education level and average income per year have an influence on agricultural information access and use. The study recommended that the existing agricultural information systems and services should be reviewed. A centralized agricultural database management system should be established to collect, organize, and disseminate agricultural information to small-scale crop farmers focusing on their social-demographic differences.

Keywords: Access; Agricultural Information; Agricultural Information Services; Social- Demographic Differences; Use; Tanzania.

Introduction

Agriculture is the backbone of the country's economy. It is dominated by small-scale subsistence farming in which approximately 68% of the cultivated land is used by small-scale farmers who operate between 0.5ha and 2.0 ha (URT, 2011). It is one of the most important sectors which have always been under considerations throughout the world. Agriculture plays a significant role in the social-economic development of any country particularly developing countries like Tanzania. Agricultural information service provision is at the center of it. To boost the sector; the government has introduced

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various strategies such as Agricultural Sector Development Plan, Economic and Social Action Plan, Rural Development Strategy, Tanzania Development Vision 2025, adopted the Sustainable Development Goals (SDG) and the recent "Agriculture First" popularly known as Kilimo Kwanza to facilitate agricultural development. However, despite having these strategies to facilitate agricultural development, agricultural performance is unsatisfactory (URT, 2011). Tanzanian farmers particularly those in Rukwa region are not benefiting from these agricultural innovations. This is probably because the farmers do not know where to get vital information or because information is not properly and adequately disseminated; it is uncoordinated and fragmented which lacks focus and proper strategies in addressing small-scale farmers' information requirements (URT, 2011). Studies show that despite having enormous and varied information needs, the needs have not been met and for decades information service providers have failed to provide effective information services to farmers in Tanzania. (Siyao, 2012). This situation is attributed to inadequate flexible information service provision strategies coupled with the influence of social-demographic

features.

Farmers need information to make informed decisions and address their daily social and economic needs. Small-scale crop farmers need information for various reasons. They include but not limited to knowing the procedures of increasing crop production, effective use of fertilizers, useful pesticides and insecticides, access to credit facilities, adding value and marketing of their crop products, high yielding seeds etc. Well informed and information-conscious small scale farmers are a roadmap to sustainable crop production. Although information is recognized as an important resource in the agricultural development and crop production in general, the extent to which information services provided to small-scale farmers is influenced by social-demographic features in the country is not clearly demonstrated with very few studies that focus on it. Social-demographic variations in accessing and using agricultural information services might be along the dimensions of sex, age, gender, education level, income per year and crop yield per year (In 100kg bags). These variations tend to affect access to and use of agricultural information services. This study, therefore, endeavored to analyze the influence of social-demographic features on agricultural information services provided to small scale crop farmers with a view to proposing strategies to minimize the problem.

Objectives of the Study

1. To determine the social-demographic characteristics of small scale crop farmers in the region
2. To explore the influence of social-demographic features on agricultural information services
3. To propose strategies to minimize the influence of social-demographic differences in accessing and using agricultural information services.

Literature Review

Information is a raw material for any meaningful agricultural development. The prosperity and growth of agricultural industry in any country depend on how it acquires, produces, processes, uses and disseminates relevant and good quality agricultural information to its stakeholders. Tanzania has accumulated a vast amount of agricultural information over years. The increase of new technology and innovation has greatly contributed to the massive production of agricultural information

through research conducted by various institutions countrywide.

Agricultural Information Needs

Small-scale crop farmers constitute a particular group of users whose information needs are very specific to their farming activities. Their information needs are dynamic and vary according to their daily activities and exposure to new innovations. Several scholars in Africa and other developing countries worldwide such as Agyei and Osman (2014) in Ghana; Bernard, Dulle, and Ngalapa (2014) in Tanzania and Omogor (2013) in Nigeria, to mention, but a few surveyed agricultural information needs of small-scale farmers in their respective areas. These scholars come into a consensus that, farmer's information needs vary from one individual to another, village to village and from one farming activity to the next. The surveys also show that small-scale farmers need information for various purposes in the course of undertaking their agricultural activities. They also use different sources and media to have access to such information.

Sources of Accessing and Using Agricultural Information

For information to be accessed and used by the intended audience, it has to be carried in a user-friendly format which takes into consideration the user's literacy level, age, economic status, culture and above all, user's preference. Craig and Stilwell (2003), noted that print agricultural materials are used extensively to provide information to farmers; they play a vital supportive role in information service provision especially to low -literate communities. However, print sources of information cannot be used by illiterate farmers who are scattered all over rural places in Africa including Tanzania. Angelo, Msuya, and Matovelo (2016) observed that in Tanzania several print agricultural sources of information are used to disseminate information to farmers, the main avenues being books, research reports, newsletters, handbooks, conference proceedings, journals etc. Reports are produced annually or by-annually by different research institutions such as Universities, COSTECH, REPOA, and not for profit agricultural organizations.

The decline of agricultural production in the recent past indicates that despite having a vast amount of agricultural information in the country, small-scale farmers are not fully accessing and utilizing it. This situation may probably be attributed to the fact that the information services provided do not put into

consideration the demographic differences. As a result agricultural information is minimally accessed and utilized. Small-scale farmers use agricultural information throughout their farming season. However, studies have shown that several factors such as cultural, social-economic, demographic factors, personal, political and geographical variables affect agricultural information use (Opara, 2010, Siyao, 2012, Lwoga, Stilwell and Ngulube 2011 and Agyei and Osman, 2014).

Murugan and Balasubrami (2011) conducted a study on information seeking behavior of cassava growers in India. The study found out that, farmers mostly use radio, films, video and television programs. Most studies in developing countries, particularly Africa show that small-scale farmers prefer informal verbal communication in accessing and sharing agricultural information. For example studies by Agyei and Osman (2014), Lwoga, Ngulube and Stilwell (2010), Asenso-Okyere and Mekonnen (2012), Mwakaje (2010) and Mtega, (2012) show that small-scale farmers prefer their fellow farmers, neighbors and village leaders. Other informal sources utilized in the named studies include church leaders, traditional dances, and experience which is shared among farmers orally, opinion leaders, and role models. Omogor (2013), found out that sources used to access agricultural information include town-criers, marketplaces, socio-political meetings, traditional festival, role play, songs, and dance, demonstration, lecture and exhibition, mobile handsets, television, and radio. Internet-based sources of agricultural information; agricultural magazines newspapers and libraries were found to be rarely used in most parts of Africa.

Agricultural Information Service Provision

The vast store of agricultural information has been built up in the world over many years since the ancient Babylonian time. The ultimate aim of agricultural information has always been to increase agricultural production. Thus improved information flow to, from and within the agricultural sector is a pre-requisite for effective and meaningful agricultural production and development. According to Salami et al., (2010) African smallholder farmers can be categorized on the basis of the agro-ecological zones in which they operate; the type and composition of their farm portfolio and landholding; or on the basis of their social demographic characteristics. This categorization facilitates agricultural information service provision for instance agricultural reference services; selective dissemination of agricultural information, information referral services and

agricultural information translation services. Reference service provides the mechanism by which the users of agricultural information can interface with the larger body of knowledge to secure what they need for their daily farming activities. According to Bopp and Smith (2011), the service may range from the provision of desired information to the training and educating the user to identify and locate what he/she needs from a larger body of knowledge, in this case, agricultural knowledge. Aina (2004) asserts that information users have different information queries that need to be solved by librarians or extension officers in the case of farmers. It is a person to person information service where information service providers need to articulate the problem of the user clearly. With the advent of ICTs, reference services have been made easier, as most of the reference queries can easily be answered through surfing the internet or searching relevant databases like AGRICOLA, AGRINET, CABI or AGRIS. Selective dissemination of agricultural information aims at providing small scale crop farmers with information that will promote their inquiry for information on their daily farming activities. It is a personalized information service. It helps information service providers to sieve information from a vast amount of documents and other relevant information for farmers. This helps to serve the time of farmers and information service providers (Aina, 2004a). In the process of providing Selective Dissemination of Information (SDI), agricultural information service providers select relevant information and provide it to small scale crop farmers to address their information needs. This process is done after processing it, i.e repackaging, organizing, abstracting and assessing it before making it useful to small-scale farmers. Information service providers have to communicate with small scale crop farmers, interview them and set user profile in order to be able to provide specific and relevant information based on their information needs. Aina (2004b) asserts that there are situations where information users are directed to another information source or alternative information resource center. For example, small-scale crop farmers might be directed to another agricultural expert, organization or a research institute which provide agricultural information. This is called information referral service. The role of agricultural information service providers is to search for and maintain an updated list of experts, researchers or organizations which produce and provide agricultural information. These organizations, experts or researchers where small-scale crop farmers will be referred to in case of information needs should be reliable and trustworthy with high utility and credibility.

Agricultural information is always accompanied by technical jargons which are difficult for small-scale farmers to digest. Studies by Lwoga (2010), FAO (2012) and Agyei and Osman (2014) show that one of the challenges facing small-scale farmers in accessing and using agricultural information is the presence of too many technical terms. Aina (2006) suggested agricultural information repackaging in a format that would be comprehensible to farmers i.e familiar language. It is a good method of providing information service to farmers. He also suggested that information service providers should be equipped with necessary skills that would help them in information repackaging. Various literatures show that farmers understand better and utilize information which is provided in a language which is familiar to them, i.e their own local languages.

Methodology

The study involved 150 small scale crop farmers from Rukwa region. A combination of quantitative and qualitative research methods was employed in the study. Systematic sampling was used to select 150 small scale crop farmers. Purposeful sampling was used to select villages with field farm schools, 50 small scale crop farmers, 27 information service providers and six district agricultural and livestock officers as key informants. Questionnaires were used to collect data supplemented by interviews and non-participant observation. Quantitative data was analyzed using descriptive statistics. Statistical measures (Chi-square) were used to determine the significant factors affecting access to and use of agricultural information services. The results were cross-tabulated against social-demographic features of respondents. Qualitative data was thematically analyzed based on study objectives. The results were presented using frequency distribution tables, bars, charts, and figures.

Findings and Discussion

Social-Demographic Characteristics of Respondents

Respondents were asked to indicate their age ranges, gender, education level; the size of land cultivated and crop yield and average income per year. These demographic characteristics of respondents were included in the study with the purpose of examining their influence on the whole process of accessing and using agricultural information services. Statistical-Chi square test was

performed to examine the relationship among demographic variables as independent variables and aspects of information service provision as dependent variables. The findings are presented in Table 1.

The study established that a significant number 69 (45%) of the respondents were middle-aged 30-39 years and 44(29%) respondents were 40-49 years. The finding of this study with regard to age of respondents concurs with most of other studies done on small scale farmers in Africa and other parts of the world (Munyua 2011; Benard, Dulle and Ngalapa 2014 and Agyei and Osman (2014) Small scale farming activities are dominated by middle-aged people who are energetic, enthusiastic and ready to learn new farming technologies through agricultural information services provided to increase crop productivity. However, this was not the case for small scale crop farmers in the study area. Although most of them were young, middle-aged and energetic, they still relied on poor methods of farming which resulted in low crop production. This situation is partly attributed to the fact that most of them are either not exposed to agricultural information or they do not know where and how to access it. Gender and education level of respondents are said to have much influence on agricultural information access, use and agricultural information service provision in general. The findings show that out of 150 respondents, 76(51%) were female and 74 (49%) were male ranging from 20 to 69 years. The majority (73.4%) of the respondents had primary education, and eight (5.2%) had secondary education. Among respondents with primary education, 62(81.6%) were female and 51 (68.9) were male. The Pearson Chi-square findings show that there was a statistical significance between gender of respondents and their education level (p -value ≤ 0.05). Modern agricultural information is recorded in different forms and formats outside the human memory. To access such information, the user is required to be literate with some skills on how and where to obtain the information. Low crop production and sluggish economic growth in the study area may be attributed to the reliance of residents on human memory and experience from friends and colleagues to obtain agricultural information. Through education, small scale crop farmers can acquire necessary knowledge and skills to facilitate their crop production. For farmers who are illiterate or have low literacy levels like those in the study area, appropriate information packages are required to facilitate agricultural information access and usage to enhance crop production.

The findings show that small-scale crop farmers cultivated an average of 3.4 acres per person with an average of 22 bags per year. The highest recorded

average number of bags per acre was 25 and 23 bags at Kalumbaleza village and Mtimbwa village respectively. According to Rukwa Investment Profile (2013), the average crop production per acre was minimally 15 cereal bags and maximally 20 100kg maize bags per acre. The findings show that small-scale crop farmers obtained approximately seven maize bags per acre. This crop production trend was

low compared to 2012/2013 Rukwa region crop production trend (Rukwa Investment Profile, 2013). It was also shown that the bigger the land one owns the more crops one obtained. A statistical test (Pierson Chi-Square) show that there was a significant difference between land ownership and crop yield in bags per year as the P-Value was 0.01.

Table 1: Demographic Characteristics of Respondents N=150

Characteristics		Frequency	Percentage
Sex	Male	74	49%
	Female	76	51%
Age (In years)	20-29 age bracket	23	15.3 %
	30-39 age bracket	69	46%
	40-49 age bracket	44	29,3%
	50-59 age bracket	8	5.3%
	60-69 age bracket	6	4%
Education (Highest attained)	Non	18	12.7%
	Informal education	11	8.7%
	Primary education	113	73.4%
	Secondary education	8	5.3%
Size of land cultivated	Less than an acre	33	22%
	1-5 acres	72	48%
	6-10 acres	35	23%
	More than 10 acres	10	7%
Crop yield in 100kg bags/year	Less than 5 bags	38	25%
	5-10 bags	55	37%
	11-15 bags	48	32%
	16-20 bags	8	5%
	More than 20 bags	1	0.7%
Average income/ year (TSH)	100,000-200,000	43	28.7%
	201,000-300,000	54	36%
	301,000-400,000	36	24%
	401,000-500,000	16	10%
	500,000+	1	0.7%

The Influence of Social-Demographic Features in Accessing and Using Agricultural Information Services

The Pearson’s chi-Square test was used to determine whether there was a significant difference between independent variables like age, gender, education, and income per year and dependent variables like information services accessed and the sources used to access information Pearson’s chi-Square test was used because the frequencies obtained on information needs needed to be further tested to determine the influence of demographic variables in accessing and using agricultural information. Based on the chi-square test, if the “P” value (Asymp.sig) is greater than 0.05, then there is no significant difference among the variables being tested. This means one variable does not influence the other. But if the “P” value is less than or equal to 0.05, then there is a significant difference among the

variables being tested, i.e one variable influences the other.

Agricultural Information Accessed and Used by Gender

The findings show that male respondents were leading in most of the accessed information while their female counterparts were leading in accessing trade fair information.

For example, female scored 35 (55%) in trade fair information and male respondents scored 29 (45%). From a Pearson chi-Square test performed, it was established that there was a significant difference on information accessed by gender with the P-Value .000 across gender. It can, therefore, be deduced that gender influenced agricultural information accessed. More information is obtained in Table 2.

Table 2: Relationship between Gender of Respondents and Accessed Information

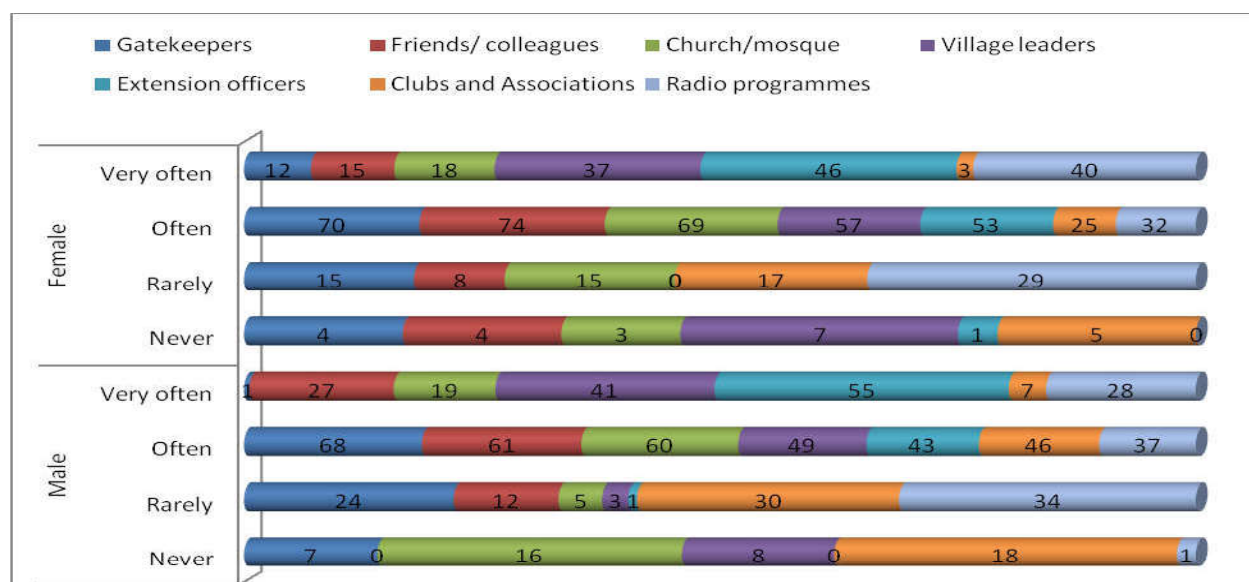
N=150

Accessed Information	Female		Male		Pearson's chi-Square (P-Value)	Remarks
	F	%	F	%		
Trade fair	35	55	29	45	$\chi^2 \leq 51$ df= 8 Appro. Sig=.000 (2 sided) P-Value .000	Significant Difference
Warehouse Receipt System	41	47	46	53		
Where and how to get market for crops	65	51	63	49		
Horticulture	27	44	35	57		
Credit and loan facilities	42	47	47	53		
Input subsidy	38	48	42	53		
Irrigation	41	47	47	53		
Proper Modern farming methods	37	44	48	56		

The findings of this study concur with a study by Odini, Otike and Kiplang'at (2012), which established that women were constantly in need of information related to their daily activities of farming, business, education, and training, among others. In most developing countries and Africa in particular, women are the productive forces in the agricultural sector. They are faced with a dual responsibility of taking care of the family and at the same time, engage in productive activities to raise income for the family. This is probably the reason why most female respondents needed more information on trade fair activities and credit and loan facilities compared to male respondents.

The findings show variations of information accessed across villages. Information on trade fair ranked high at Kalumbaleza 15(23%), Muze and Mtowisa with 13 (20%) respondents each, and Katuka 11(17%) followed by Kasense 13(26%). Information on Warehouse Receipt System ranked high at Kizombwe 15(17%), Kasense 14(16%), Kalumbaleza 12(14%) and Msanzi 12(14%). Information on

horticulture was rated high at Kizombwe 15(24%), Mtowisa 13(18%), Kalumbaleza 11(18%), Kasense 8(13%) and Milanzi 8(13%). Statistical test from Pearson chi-Square test performed established that there was a significant difference on information accessed across villages involved with the P-Value .000. A similar trend in accessing agricultural information across villages was observed by other studies worldwide. For example, in Tanzania, studies by Lwoga (2010); Bernad, Dulle and Ngalapa (2014); Elly and Silayo (2013) and Lwoga, Stilwell and Ngulube (2011) observed that small scale crop farmers across villages and communities have varied information needs. Similarly, Byamugisha, Ikoja-Odongo, and Nasinyama (2010) in Uganda found out that the information needs of the urban farmers in the study area seemed to be as varied as their farming activities and also appeared to vary from one urban farmer to another. Another study by Agyei and Osman (2014) in Ghana revealed that the farmers' range of information need differed greatly depending on the level of their activities and also from one community to another.



*Multiple Response was possible

Fig. 1: Sources Used to Access Agricultural Information by Gender N=150

Gender Differences on Sources Used to Access Agricultural Information

Gender analysis was made on sources used to access agricultural information. It was established that there were slight differences in preference of information sources used by respondents with P-Value of less than 0.05 in all frequently used sources of information. More female respondents 53(70%) used gatekeepers as their source of information compared to male 50(68%) respondents. The findings further show that radio programs were more preferred by female 30 (40%) than male respondents 21(28%). This is probably because female spend more time at home taking care of the family compared to men, thus they have ample time to listen to radio programs. Extension officers were more preferred by male 41(55%) than female respondents 35 (46%). This situation was attributed to the fact that most extension officers were male and female respondents were not free to talk to them due to social-cultural barriers. More findings are presented in Figure 1

Age Differences in Sources Used to Access Agricultural Information

A cross tabulation was made of frequently used sources of information against the age of respondents.

It was established that respondents aged 30-39 years and 40-49 years were active in using sources of information. This was probably because they needed much information from a variety of sources to enable them to carry out their farming activities efficiently and enhance production. Respondents aged 60-69 years hardly used most sources, particularly printed and electronic sources. They relied on friends and colleagues, the church and mosque, extension officers and village leaders six. Pearson’s chi-square statistical tests show that there was a significant difference on preferred sources of information across age of respondents as the P-Value was either less than or equal to 0.05 for most of the frequently used sources of information. From these findings, it was established that age influences the use of sources of agricultural information. A similar trend was observed by Lwoga, (2010) and Mtega, (2012). The trend in an active farming age to access more agricultural information observed in this study is in line with studies done by Agyei and Osman (2014), Aramide et al., (2015) and Buchav (2012). Further findings indicated that there was no significance difference in access to modern farming information, pest and pets management and product packaging technology. This is probably because respondents were using their own experience. More information is indicated in Table 3.

Table 3: Relationship between Age of Respondents and Sources Used to Access Agricultural Information N=150

Information Source	Frequency of Using the Source	19-29	30-39	Age 40-49	5 0-59	60-69	P-Value
Gatekeepers	Never	3(38%)	5(63%)	-	-	-	0.001
	Rarely	9(31%)	16(55%)	4(13%)	-	-	
	Often	11(11%)	46(45%)	32(31%)	6(6%)	-	
	Very often	-	2(20%)	8(80%)	-	-	
Friends/ colleagues	Never	2(67%)	1(33%)	-	-	-	0.035
	Rarely	5(33%)	6(40%)	3(20%)	5(5%)	6(6%)	
	Often	16(16%)	41(41%)	33(33%)	2(7%)	-	
	Very often	-	21(68%)	8(26%)	-	-	
Church /mosque	Never	-	11(85%)	-	27(15%)	-	0.006
	Rarely	2(13%)	7(47%)	2(13%)	1(7%)	3(3%)	
	Often	17(18%)	38(40%)	32(34%)	4(4%)	-	
	Very often	4(14%)	13(46%)	10(36%)	1 (4%)	-	
Village leaders	Never	-	6(55%)	3(27%)	2(18%)	-	0.071
	Rarely	-	2(100%)	-	-	-	
	Often	9(11%)	38(48%)	21(27%)	5(6%)	6(8%)	
	Very often	14(24%)	23(40%)	20(35%)	1(2%)	-	
Extension officers	Never	-	1(100%)	-	-	-	0.208
	Rarely	1(100%)	-	-	-	-	
	Often	8(11%)	34(47%)	19(26%)	5(7%)	6(8%)	
	Very often	14(18%)	34(45%)	25(33%)	3(4%)	-	
Radio programmes	Never	-	-	-	-	-	0.000
	Rarely	5(11%)	21(45%)	13(28%)	5(11%)	6(8%)	
	Often	9(18%)	29(60%)	8(16%)	2(4%)	-	
	Very often	9(18%)	19(37%)	23(45%)	-	-	

Further statistical analysis on the influence of age in choosing agricultural sources of information showed a significant statistical difference on; affordability of the source, format of the source and ease of use. A two-tailed Pearson Chi-Square test showed a significant difference with P- value ≤ 0.05 . On the other hand, the findings indicated that age did not influence the choice of information sources with regard to sources closeness, availability, reliability, and adequacy of information obtained from the source. This was probably because respondents relied much on informal sources of information.

Pearson's chi-square statistical tests show that there was a significant difference between average income generated per year and the sources used to access agricultural information. The P-Value was either less than or equal to 0.05. These findings are in line with Opara (2010), who noted that income is crucial in agricultural information acquisition and use because the higher the income of the farmer, the more he/she would seek information for use. With improved income earned from crop production, the farmer will be in a better position to acquire more information to improve crop production. However, most small scale crop farmers in the region are poor and have little or no access to credit facilities. Therefore, they tend to seek information from sources that are convenient, readily accessible, easy to use and require least effort. They tend to make decisions on farming activities based on their experience, their thinking and on ways that are easy, natural and convenient. This situation affects crop production in the region.

Differences in Crop Production and Agricultural Information Services Utilized

Pearson Chi-Square Test was used to determine the relationship between crop production and agricultural information service provided. From the findings, it can safely be established that crop production is influenced by agricultural information services provided and utilized in the area of study. This depends on the type of information service provided and whether it addresses the information needs of respondents or not. For example, if respondents are provided with current awareness services, selective dissemination of information, training on farming issues, on farm reference services, technical advice, and information on how to use information sources, they can probably increase their production and vice versa. However, other agricultural information services seem not to have an effect on crop production as they show no significance difference. The findings show that information repackaging, document delivery and routing services, CD-ROM database provision, translation services and abstracting services did not influence crop production in the study area. This is probably due to the fact that these services were not available in the study area due to either presence of few agricultural information service providers, lack of necessary skills among information service providers, poor budget allocation and prioritization on agricultural information service provision in the country. More findings are indicated in Table 4.

Table 4: Relationship between Crop Production and Agricultural Information Services Provided N=150

Information service	χ^2	Df	Pearson Chi Square Test		Remarks
			Asympt. Sign (Two sided)		
On farm reference services	4.261	4	0.02		
Current awareness services	2.131	4	0.03		P-Value ≤ 0.005
Selective dissemination of information	3.211	4	0.02		Significant
Instant messaging through mobile phones	14.597	4	0.05		Difference
Technical advise	3.786	4	0.01		
Instruction on how to use the sources	1.801	4	0.04		
Training on different farming issues	6.558	4	0.05		
Information repackaging	1.892	4	0.35		
Document delivery service	2.351	4	0.85		P-Value $\geq .005$
Routing of documents on new innovations	7.165	4	0.37		
Photocopies of available literature	5.558	4	0.32		No Significance
CD-ROM database provision i.e AGRICOLA	3.118	4	0.53		Difference
Translation services of available literature	1.061	4	0.90		
Information referral services	5.589	4	0.93		
Abstracting services	1.862	4	0.93		

Proposed Strategies to Minimize the Influence of Social-demographic Differences in Accessing and Using Agricultural Information Services

The findings show that social-demographic characteristics of respondents have an influence on access to and use of agricultural information. Small-

scale crop farmers are the primary consumers of agricultural information services. In this regard, the following strategies are proposed to improve access to and use of agricultural information services.

Small-scale crop farmers should be receiving transcribed, translated and repackaged information from professional information service providers in print and electronic format bearing in mind their social-demographic differences. Agricultural information systems, services, and resources should be coordinated and should consider social-demographic characteristics of small scale crop farmers. In order to facilitate effective access to and use of agricultural information service provision, there should be a centralized agricultural database management system to collect, organize, translate and disseminate agricultural information to small-scale crop farmers countrywide based on their information needs and social-demographic differences. The government, in collaboration with information experts like librarians, database management experts, social media experts and IT experts should ensure that all aspects related to agricultural information service provision are properly managed to meet the dynamic needs of the farming community in the country. In addition, agricultural institutions, curriculum developers, and information experts should work together to develop long term and short term courses in agricultural information management to acquaint information service providers with necessary knowledge and skills in agricultural information service provision.

Conclusion and Recommendations

The study established that demographic characteristics of respondents influence agricultural information service provision. Statistical tests (Chi-square) show that there was a significant difference statistically between demographic characteristics of respondents such as age, gender, education level, farm yield and income per year and various aspects related to access and use of agricultural information service. Based on the findings it is therefore recommended that the existing agricultural information systems, services, and sources should be reviewed with a focus on physical, human, financial, practical, theoretical gaps and above all the social-demographic differences of farmers. The study, therefore, emphasizes on collecting, processing, organizing and preserving agricultural information in a centralized database system for to simplify the process of accessing and using it. Finally, the findings

of this study may be used to design user-friendly agricultural information systems and services which focus on social-demographic differences of small scale farmers.

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