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Attitude of Crop Farmers towards Public Agricultural Extension Services: Implication for Extension Programming in Tanzania

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Abstract: *Overtime, effectiveness of extension service has been the focus of many studies. However, most of these studies have paid more attention on the service itself neglecting the service users' attitude about that service. It is envisaged that a positive attitude is a key requirement for service utilization. Therefore, this study assessed crop farmers' attitudes towards agricultural extension services (AESs) in Mpwapwa and Mvomero districts. The study was conducted from December 2017 to February 2018 and used questionnaire and focus group discussions to collect data from 292 participants who were randomly selected. Data were analyzed using descriptive statistics (frequency counts, mean, and percentages), and content analysis. The study found that although AESs were provided in the study area 40.1% of farmers were never visited by extension agents in a month before the study. It was further revealed that 73.5% of the respondents had a favourable attitude towards AESs that are provided in the study area. It was concluded that overall farmers have positive attitude towards public extension service although the service seems not to perform better in areas of marketing, value addition and access to loans and credits. The study recommends that efforts should be made to make sure that all farmers are visited by extension agents. Additionally, extension service should increase emphasis on linking farmers with markets, loans and credits, and capacity building on crop value addition.*

Keywords: Attitude, Agricultural extension services, Crop farmers, Tanzania, Extension programming

1.0 Introduction

Agricultural extension services (AESs) have been recognized to contribute significantly to the promotion of agricultural development (Anderson, 2007). Working through frontline extension agents, the agricultural extension offers technical advice on agriculture to farmers, and supplies them with the necessary inputs and services to support their agricultural production (Swanson and Rajalahti, 2010; Swanson, 2009; Birner *et al*., 2006). Agricultural extension is an important tool for modernizing agriculture in developing countries specifically in sub-saharan Africa (Mutimba, 2014). This is because it is responsible for communicating agricultural innovations to farmers, as it was said by Norman Borlaug, the late 1970 Noble laureate.

Issahaku (2014) argues that agricultural extension as a philosophy defies one definition, and there are many approaches to agricultural extension the world over. For example, the author defines agricultural extension as a professional communication intervention deployed by organisations to disseminate agricultural knowledge and technologies to rural communities. Van den Ban and Hawkins (1996) add that agricultural extension is not only seen as a vehicle for spreading scientific technologies but is also a broader concept that emphasizes the implementation of projects, delivery of knowledge, and information.

According to Anderson (2007), "agricultural extension refers to the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods" (p. 6). Davis (2008) adds that although agricultural extension was conceived to transfer technology from research to rural farmers and teach them about agricultural production practices, today's role of extension goes beyond technology transfer to facilitating integrated rural development and therefore assists farmers to form groups, links them to markets, inputs and other sectors of development. In support of that, Anderson (2007) concludes that extension has a dual function of facilitating both the adoption of technologies as well as the adaptation of technologies to local conditions. Given these conceptions, the role of agricultural extension should no longer be viewed as for educating farmers on how to grow crops but rather facilitate the integrated rural development. Governments around in Africa, for example, have overtime put in place policies and programs to ensure that AESs are relevant and efficient to contribute to facilitating agriculture and rural development. To this end, different institutional and organizational changes have been made. Decentralization of the services is one example for Tanzania (Komba *et al.*, 2019).

Decentralization of agricultural extension services in Tanzania put the administration of the services under the three ministries: Ministry of Agriculture (MoA), Ministry of Livestock Development and Fisheries (MLDF), and President's Office, Regional Administration and Local

Government (PO-RALG). At the national level, the three ministries share the responsibility for extension services. At the regional level, there are Regional Agricultural Advisors (RAs) to the Regional Administrative Secretary (RAS) whereas under the District Council the District Executive Director (DED) is in charge of all government programs including agricultural extension services. The District Agriculture, Irrigation and Cooperative Officer (DAICO) who is responsible for crops, and District Livestock and Fisheries Officer (DLFO) who is responsible for livestock assist the DED. This organization continues down to the local level (as shown in Figure 1) where there are Ward and Village agricultural extension officers (WAEOs and VAEOs) who work directly with farmers. In the year 2020, for example, according to Tanzania Ministry of Agriculture statistics, there are about 6,704 agricultural extension workers in Tanzania 80% of which are frontline extension workers meaning that they are deployed at ward and villages level.

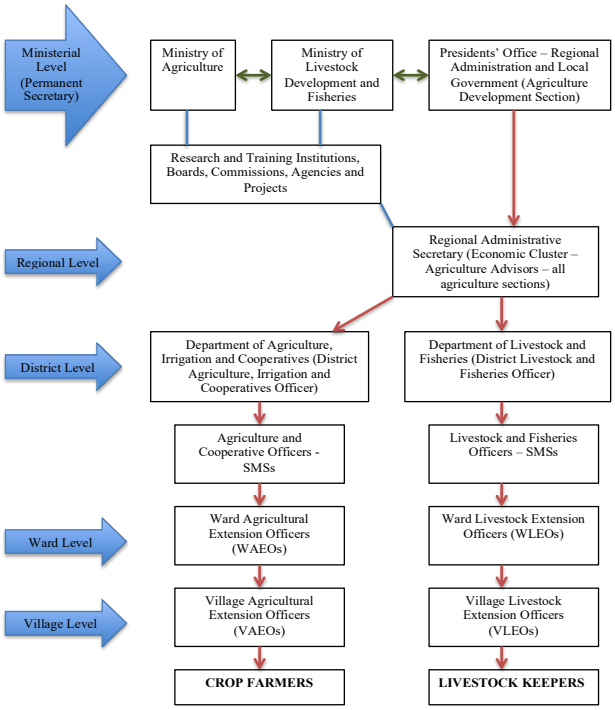

Figure 1: Organization of agricultural extension services in Tanzania (Source: Authors' compilation)

However, serious reservations are being expressed about the performance and capability of the services by policymakers, experts, and even the farmers, placing the future of the public extension system in doubt. It is obvious that despite development in communication technologies, the effectiveness of AESs is highly dependent on the ability of competent extension workers. This is because the entire extension process is dependent on them to communicate information from extension organizations to the clients. But on the other hand, given the philosophy guiding the provision of public extension services in Tanzania, how clients perceive the service provision is key to its effectiveness.

Overtime, effectiveness of extension service has been the focus of many studies (Msuya and Wambura, 2016; Komba, 2018; Girmachew, *et al.,* 2020). However, most of these studies have paid more attention on the service itself (supply side) neglecting the service users' attitude about that service. It is envisaged that a positive attitude is a key requirement for service utilization (Kumar and Ratnakar, 2011). Attitudes are considered the main constraints to farmers' adoption of technologies and, consequently, lowering agricultural production (Qtaishat and AL-Sharafat, 2012). Therefore, this study assessed crop farmers' attitudes towards agricultural extension services (AESs) in Mpwapwa and Mvomero districts.

2.0 Theoretical and Conceptual Framework

Attitudes have played a central role in the psychological literature on understanding human thought and behaviour. Attitude reflects a predisposition to behave in a certain manner. Attitudes are usually defined as 'general and enduring favourable or unfavourable feelings about, evaluative categorizations of, and action predispositions toward stimuli' (Cacioppo and Berntson, 1994 p.401). According to Thurstone (1931), people's feelings about an object or an issue can range anywhere between two extremes: maximally positive and maximally negative. Assuming that individuals control the reciprocity of the positive and negative evaluation process, this allows attitudes to be measured along a positive-negative continuum.

The strength with which an attitude is held is often a good predictor of behaviour. The stronger the attitude the more likely it should affect behaviour (McLeod, 2014; Golrang *et al*., 2012). In connection to that, Ajzen and Fishbein (1980) stated that the attitude of an individual is critical in determining his/her intention to us or not to use an item. Kumar and Ratnakar (2011) make a point that a positive attitude is an important requirement for agricultural technology utilization. Tanzania crop farmers' attitude towards agricultural extension services will, therefore, determine their acceptance and utilization of such services. Measuring the attitudes of farmers towards extension and advisory services is crucial in determining its effectiveness and efficiency (Arifullah *et al.,* 2014). This is because farmers' attitude towards AESs is one of the indicators of the effectiveness of the extension services delivered by various stakeholders. Literature show that attempts have been made to study the subject but attention has been more directed on the farmers' attitude towards the effectiveness of extension workers in Tanzania (Mcharo, 2013, Oladosu, 2006), others on a certain technology or agricultural practice (Ntawuruhunga, 2016, Oluwasusi, 2014, Ognsumi 2011). Very few have targeted assessing farmers' attitudes toward AESs in totality. This study, therefore, which assessed crop farmers' attitudes towards AESs, was guided by the theory of planned behaviour.

According to the Theory of Planned Behaviour, we can more accurately predict peoples' intention to perform a particular behaviour from their attitudes toward that behaviour, subjective norms, and perceived behavioural control (Ajzen and Fishbein, 1980). The intention, together with the perceived behavioural control, account for considerable variance in actual behavior. Although farmers' acceptance and use of public AESs depend on their attitude, subjective norms and perceived behavioural control of such services, this study focused only on farmers' attitudes towards public AESs.

3.0 Methodology

3.1 Study area

The study was conducted in two districts namely, Mvomero which is found in Morogoro Region, and Mpwapwa, which is found in Dodoma Region. The two districts were selected in order to increase the national coverage in terms of public extension service consumers. Mpwapwa district is semi-arid with low soil fertility and rolling plains making it susceptible to water erosion. One the other hand, Mvomero district exhibit a mixture of undulating mountains, miombo woodland and Savannah River basin zones. This feature makes it favourable for both food and cash crop production. Also according to Sife *et al*. (2010), agriculture is the main economic activity in both districts, making farming to be the main occupation for the majority of people in the area.

3.2 Population, sample size, and sampling procedure

The study adopted a multi-stage sampling technique. First, the two districts were purposively selected (reasons stated above). One ward was randomly selected from each of the two districts, Dakawa and Lupeta in Mvomero and Mpwapwa Districts respectively. Thereafter, in each ward one village was randomly selected, Wami- Luhindo in Dakawa and Makutupa in Lupeta. 300 households were randomly selected using sampling proportional to size to get 137 and 163 households from Wami-Luhindo and Makutupa village respectively. The sampling unit was the household while the target respondent was the household head.

3.3 Instrumentation and data collection procedure

Data were collected through face-to-face interviews by using a researcher-developed questionnaire and by conducting Focus Group Discussions (FGDs). The attitude was measured by using a summated rating scale (Spector, 1999), whereby, respondents were asked to indicate their opinion on 12 statements (six positive and six negative) regarding AESs. The addition of negative items to the scale has been recommended "to reduce the acquiescence bias which occurs when people tend to agree with statements without regard for their actual content…." (Salazar, 2015: 192). These statements, covering different aspects of agricultural extension, were collected from available literature, informal discussions with extension experts and farmers during the reconnaissance visit.

Respondents were asked to rate their level of agreement with each of the statements by stating whether they Strongly Agree (SA), Agree (A), are Undecided (U), Disagree (D) and Strongly Disagree (SD) with weights of 5, 4, 3, 2 and 1 respectively. The attitude measurement scale was developed based on Spector (1999), where the final results were expressed in frequencies. Accordingly, the attitudes of the interviewees of a survey were later categorized into two: favourable attitude and unfavourable attitude towards AESs.

3.4 Data analysis

Data from the cleaned questionnaire were entered into the computer and analyzed by using the International Business Machine (IBM) Statistical Packages for Social Sciences (SPSS) version 20 computer software. During the data cleaning process, eight (8) copies of the questionnaire were found unusable leaving a total of 292 usable questionnaires. In measuring attitude, scores for individual statements were summed and then divided by 12 (total number of statements) to get an average composite attitude score for each respondent, forming a new continuous variable with values ranging from 1 to 5. Based on the scores obtained, the respondents were categorized into having an unfavourable attitude (score below 3), neutral (3), and favourable attitude (scores above 3) towards AESs.

Statement-wise analysis of the attitude of farmers towards AESs: The mean score of each statement was obtained by adding the weights given to the statement by respondent divided by the total number of the respondents. The mean score was worked out for each statement and rank positions were assigned based on their mean scores obtained. It is to be noted that the scores for the negative statements were reversed to make sense, therefore these statements, although they are negatively written, interpretation is based on their positive connotation.

4.0 Findings and Discussion

4.1 Respondents' Demographic Characteristics

As indicated in Table 1a, males constituted 77.2% of respondents whereas females constituted 22.8%. Tanzania national statistics shows that 25.0% of households nationally, and 24.0% in rural areas, are headed by females (URT, 2013, FAO, 2014). This is not surprising as it is common in most African countries. This is because from a cultural point of view, males are predominantly heads of families. Since AESs delivery targets household heads, males have more opportunity to interact with extension agents and therefore to embrace introduced technologies than females as reported by Ajayi (2006), Temesgen and Tola (2015). However, findings show that there was no significant difference between the two districts (χ^2 = 1.187, $\rho \leq 0.276$) in terms of sex distribution of respondents (Table 1a).

Table 1a: Respondents' demographic characteristics (N=292)

Variables	Distribution of respondents by district						χ^2	ρ-value	Min	Max	Mean	SD
	Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)							
	F	%	F	%	F	%						
Sex												
Male	110	79.7	115	74.7	225	77.2	1.187	0.276				
Female	28	20.3	39	25.3	67	22.8						
Age (years)												
Below 28	12	9.0	8	3.1	20	5.8						
28 - 38	34	24.1	54	34.6	88	29.8	8.515	0.074**	21	76	44.5	12.43
39 - 49	46	34.6	54	35.2	100	34.9						
50 - 60	25	19.5	31	18.9	56	19.2						
Above 60	16	12.8	12	8.2	28	10.3						

*, ** and *** means significant at the1%, 5% and 10% levels respectively; F = Frequency; Min = minimum; Max = maximum; SD = standard deviation

Respondents' age ranged between 21 and 76 years, with a mean and standard deviation of 44.5 and 12.43 respectively. When put into age categories, 5.8% were below 28 years, 29.8% were aged 28-38 years; 34.9% were aged 39-49 years; 19.2% were aged 50-60; while 10.3% were above 60 years. This shows that about 70% of respondents were below 50 years old (Table 1a). This indicates that majority of farmers are still young who are likely to be energetic and therefore able to carry out demanding agricultural activities given the rudimental farming tools that are predominantly used. The finding from this study is in line with that of Ogundele and Okoruwa (2006) who reported that farming operations can be

better carried out by energetic people whose age usually ranges between 20 and 50 years. The study revealed a slight significant difference (χ^2 = 8.515, $\rho \leq 0.074$) between Mpwapwa and Mvomero districts at 10% level of significance. This means that there were more respondents with age below 28 years in Mvomero than Mpwapwa; more ranging between 28 and 38 in Mpwapwa than Mvomero; and more who are above 60 in Mvomero than in Mpwapwa (Table 1a).

Table 1b: Respondents' demographic characteristics (N=292)

Variables	Distribution of respondents by district						χ^2	ρ-value	Min	Max	Mean	SD
	Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)							
	F	%	F	%	F	%						
Marital status												
Single	42	31.6	28	17.6	70	24.0	10.32	0.016*				
Married	91	68.4	131	82.4	222	76.0						
Education level												
No formal educ	7	5.3	15	9.4	22	7.5	6.37	0.095***				
Primary	112	84.2	135	84.9	247	84.6						
Secondary	13	9.8	6	3.8	19	6.5						
Beyond Sec	1	0.8	3	1.9	4	1.4						

*, ** and *** means significant at the1%, 5% and 10% levels respectively; F = Frequency; Min = minimum; Max = maximum; SD = standard deviation

The findings revealed variations in terms of marital status of respondents. Married respondents accounted for 76%, the divorced accounted for about 10%, the unmarried accounted for almost 8%, whereas less than 6% were widowed. The chi-square test indicated a significant difference (χ^2 = 10.315, $\rho \leq 0.016$) in terms of marital status between the two districts at a 5% level of significance. Comparatively, Mpwapwa district had more married respondents (82.4%) than Mvomero (68.4%). It is also shown that Mvomero had more widowed household heads (about 10%) than Mpwapwa (2.5%) (Table 1b). According to Adah *et al.* (2016), presence of married couple in the household ensures availability of labour for farming activities and demonstrate a mark of social responsibility. Similarly, the same argument is made by Adegeye and Dittoh (1985) that small scale married couples are likely to be successful in farming activities especially when they had to rely on family labour.

Table 1c: Respondents' demographic characteristics (N=292)

Variables	Distribution of respondents by district						χ^2	ρ-value	Min	Max	Mean	SD
	Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)							
	F	%	F	%	F	%						
Household size												
1 - 4	54	40.6	56	35.2	110	37.7						
5 - 8	56	42.1	89	56.0	145	49.7	13.46	0.004*	1	14	5.65	2.64
9 - 12	22	16.5	9	5.7	31	10.6						
13 - 16	1	0.8	5	3.1	5	2.1						
Farming experience (years)												
1 - 5	81	60.9	56	35.2	137	46.9						
6 - 10	29	21.8	51	32.1	80	27.4						
11 - 15	14	10.5	17	10.7	31	10.6	24.45	0.000*	1	41	8.6	8.12
16 - 20	5	3.8	15	9.4	20	6.8						
Above 20	4	3.0	20	12.6	24	8.2						

*, ** and *** means significant at the1%, 5% and 10% levels respectively; F = Frequency; Min = minimum; Max = maximum; SD = standard deviation

Concerning educational attainment, study findings (Table 1b) show that most (84.6%) of respondents had attained primary school education; 7.5% had no formal education; 6.5% had secondary school education; while only a few (1.4%) had gone beyond secondary education. These findings reveal that majority (about 93%) of respondents had formal education. This implies that majority of respondents can comfortably read, write, and thus understand different extension messages and guidelines. Ability to read and comprehend can enable them to make informed decisions concerning innovations (Sebadieta *et al.,* 2007). Household size ranged between 5-8 members (49.7%), 1-4 (37.7%), 9-12 (10.6%) and 13-16 (2.1%) (Table 1c). The mean household size was 5.7 with a minimum of 1 and maximum of 14 and a standard deviation of 2.64. However, this may have favoured the supply of labour for farm activities. About half (49.9%) of respondents had a farming experience of 1-5 years, the mean farming experience of all respondents being 8.6 years (Table 1c).

4.2 Status of AESs delivery in the study area

4.2.1 Information seeking behaviour

When asked if they ever seek agricultural information, 60.2% of respondents in Mvomero and 70.4% in Mpwapwa districts respectively agreed to do so. The findings were significantly different between the districts at a 5% significance level. Overall 65.8% reported having looked for agricultural information from different sources (Table 2a). This indicates that a substantial percentage of farmers (34.2%) are not in a position to utilize the available agricultural-related information.

4.2.2 Source of agricultural information

Findings show that 48.2% of the respondents in Mvomero contacted the public extension worker, 31.3% used radio, while 13.3% contacted their neighbours or fellow farmers for relevant agricultural information. The remaining smaller proportions got information from other sources as indicated in Table 2. For the case of Mpwapwa district, 73.9% contacted the government extension agent, 12.2% used radio and only 3.5% contacted fellow farmers. These findings indicate that farmers rely more on government extension officers for supporting them with advice and information. Indeed, findings reveal a very significant difference between the two districts indicating that maybe farmers in Mpwapwa trust more government-employed extension agents than their fellow counterparts in Mvomero district (Table 2a). Another explanation for this could be because of the extension approaches used by extension agents, or even the farmer-extension ratio in the two districts. A more troubling and painful finding is that 14.7% of all respondents didn't even know if AESs are provided in the study area.

4.2.3 Providers of extension services in the study area

It was also deemed important to identify the common providers of AESs in the study area, i.e. if it is government or private extension agent. When asked if AESs are commonly provided by public or private extension agents, 97.2% and 88.8% of respondents in Mvomero and Mpwapwa respectively mentioned the public extension agent. Interestingly, a few (8%) of respondents in Mpwapwa did not know if the service provider was a public or private agent (Table 2a). This implies that some farmers pay more attention to the service provided than to the provider.

Table 2a: Distribution of respondents by status of extension services (N=292)

Variables	Distribution of respondents by district						χ^2	ρ-value
	Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)			
	F	%	F	%	F	%		
Seek agricultural information?								
Yes	80	60.2	112	70.4	192	65.8	3.41	0.043*
No	53	39.8	47	29.6	100	34.2		
Common sources of information								
Public extension agent	40	48.2	85	73.9	125	63.1		
Radio	26	31.3	14	12.2	40	20.3		
Fellow farmer	11	13.3	4	3.5	15	7.6	21.80	0.001*
Private extension agent	1	1.2	5	4.3	6	3.0		
Books and fliers	2	2.4	4	3.5	6	3.0		
Nanenane show	3	3.6	3	2.6	6	3.0		
Is extension service provided?								
Yes	100	75.2	149	93.7	249	85.3	19.79	0.000*
No	33	24.8	10	6.3	43	14.7		

4.2.4 Frequency of contact with an extension agent

This study wanted to know how frequently extension agents visit farmers in a month (Table 2b). It was found that 17.8% and 28.7% in Mvomero and Mpwapwa districts respectively were visited one to two times, 7.5% in Mvomero and 14.0% in Mpwapwa were visited three to four times, whereas 14.0% in Mvomero and 24.0% in Mpwapwa were visited more than four times. Fourteen percent in Mvomero and 24.0% in Mpwapwa said they were visited by the agent every time they needed him while 57.0% of respondents in Mvomero and 28.0% in Mpwapwa indicated they did not have any contact with their extension agent at all. This is very worrying and possible reasons for this could be a larger number of farmers to be visited by the agent, lack of transport facilities for extension agents (Mattee, 1994), and lack of motivation by extension agents (Machiadikwe *et al*. (2016) or even failure of extension agents to perform their job well. Also, it could be because of extension agents playing roles other than their primary roles (FAO, 2008) and/or the failure of farmers to demand extension services (Shausi *et al*., 2015). Farmers' failure to demand extension services might be because they don't see the impact of such services (FAO, 2008).

Table 2b: Distribution of respondents by status of extension services (N=292)

Variables	Distribution of respondents by district						χ^2	ρ-value
	Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)			
	F	%	F	%	F	%		
Extension services provider								
Public ext agent	104	97.2	133	88.7	237	92.2		
Private ext agent	1	0.9	5	3.3	6	2.3		
Both public and private extension agents	2	1.9	0	0	2	0.8	13.40	0.004*
Don't know if public or private	0	0	12	8.0	12	4.7		
Frequency of visit by extension agent per month (n=257)								
Never visited	61	57.0	42	28.0	103	40.1		
One to two times	19	17.8	43	28.7	62	24.1		
Three to four times	8	7.5	21	14.0	29	11.3	22.01	0.000*
More than four times	4	14.0	8	24.0	12	4.7		
Every time I need him	15	14.0	36	24.0	51	19.8		

Comparison of the two districts reveals a significant difference indicating more farmer contacts by extension in Mpwapwa district than in Mvomero. During FGDs in the two districts, it came out that the extension agent in Makutupa village, for example, visited his farmers more frequently than his counterpart in Wami-Luhindo village. As participants were quoted:

> *Comparing with other previous extension agents in this village, the current agent is relatively better in terms of visiting farmers. Although he does not have a transport facility, you will always see him around the village to contact farmers* (Makutupa, 5/1/2018)

There were a lot of complaints towards the extension agent in Wami-Luhindo that he was usually not available to farmers. One participant complained:

> *In this village, we have a problem regarding visiting by extension agent. We rarely see the agent visiting us to see our farm problems. He usually waits to come with visitors like you who come for different reasons including research and training* (FGD in Wami-Luhindo, 26/2/2018*)*.

When talking to the extension agent himself, he disagreed with the farmers. However, he admitted that his failure to visit farmers regularly was due to a lack of transport facilities. Although farmers' claims were valid, without transport facilities the agent cannot manage to contact all 672 farming households in a particular village. According to available guidelines a well-facilitated extension agent needs to serve on average 500 farmers.

The effectiveness of extension service is usually measured by the frequency of interaction between the extension agent and the farmer. Continuous interaction builds a good relationship between the extension agent and the farmer. Therefore, the more the frequency of interaction the more effective is the extension service. Terblanche (2005) also argues that the farmer is the object of the extension officer's concern meaning that extension officers work with people. This enables the agent, for example, to do situational analysis thoroughly so that they can provide relevant information and advice to the clients.

4.3 Crop farmers' attitude towards agricultural extension services

Of the 292 respondents, 215(73.5%)% had a favourable attitude towards AESs, while 56(19.3%) had an unfavourable attitude (Table 3). These findings show that at least a fair proportion of farmers in the study area had a favourable attitude towards AESs. Nevertheless, we cannot neglect the smaller proportion of those with unfavourable attitudes. Adah *et al.* (2016) stated that farmers' unfavourable attitudes could impede their understanding of the innovation, thereby affecting their adoption decisions. Although the study findings did not indicate a significant difference in attitude between farmers in the two districts ($\rho \leq 0.233$), it can be seen that there are relatively more farmers with a positive attitude towards AESs in Mpwapwa (77.6%) than Mvomero (69.4%). Also, although the attitude of farmers was measured by a combination of several attitudinal statements, considering the attitude of farmers towards their area extension agents, it came out during FGDs that farmers in Makutupa village (Mpwapwa) were more satisfied with their extension agent than their fellow counterparts in Wami-Luhindo village.

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Table 3: Distribution of respondents according to their attitude towards AESs (N=292)

Type of attitude	Range	Distribution of respondents by district (%)						χ^2	ρ-value
		Mvomero (n=133)		Mpwapwa (n=159)		Total (n=292)			
		F	%	F	%	F	%		
Unfavourable	Below 3	31	23.3	25	15.5	56	19.3		
Neutral	3	10	7.5	11	6.9	21	7.2		
Favourable	Above 3	92	69.4	123	77.6	215	73.5	0.138	0.233
Total		**133**	**100**	**159**	**100**	**292**	**100**		

F=Frequency

Statement-wise analysis of farmers' attitude towards AESs: It is apparent from Table 4 that the highest mean (in the bracket) was for the statements "*Extension links farmers to government and other stakeholders*" and "*Extension helps farmers grow crops better*" (4.01) which both ranked 1st. This indicates that extension service in the study area plays better its role of linking farmers to different stakeholders including the government, researchers, input suppliers, and others. Also, farmers acknowledge the service they get from the extension which helps them to grow their crops better. This is followed by the statements, "*Extension brings new technologies*" (3.95), "*Extension agents know enough about what they do*" (mean score = 3.88), "*Extension equips farmers with needed agricultural knowledge*" (3.60), and "*Extension agents are usually readily available*" (mean score = 3.56) which ranked 2nd, 3rd, 4th, and 5th respectively.

Considering the least ranked statements (with their mean scores in the brackets), Table 7 shows that the statement, "*Extension helps find markets for crops*" (2.13) ranked the 9th, "*Extension helps farmers get agricultural loans and credits*" (1.72) ranked the 10th whereas the statement, "*Extension train farmers on crop value addition*" (1.36) ranked the 11th. These findings were confirmed by farmers during focus group discussions. During FGDs in both villages, participants complained that although the extension agents are advising them to use improved seeds and fertilizers, these agricultural inputs are not usually available in the village on time. When asked to give his opinions, the extension agent in Wami-Lhindo village said, "*It is common for the government to bring the subsidized inputs late and this makes our farmers lose trust in us*".

Lack of markets for farm produces was also a common issue in the discussions. Participants complained of selling their crops at very low prices which makes them fail to recover the production costs. It was also reported that farmers were facing challenges in accessing loans and credits for agriculture because of a lack of collateral. Blames were directed to the extension service that although it was linking farmers to different stakeholders, it was not playing better its role of ensuring that farmers have access to soft loans to enable them to improve agricultural production. A quote from FGD confirms this:

> *We cannot manage large farms here because we don't have enough money to do that. It would be much better if the government through extension agents organizes and helps us to secure loans from lenders like banks and other microfinance institutions* (FGD in Wami-Luhindo, 26/2/2018).

Table 4: Distribution of respondents according to their response to attitudinal statements (n=292)

Statement	Response category - Frequency (%) SA (5)		A (4)		U (3)		D (2)		SD (1)		Total score	Mean score	Rank
	MV	MP	MV	MP	MV	MP	MV	MP	MV	MP			
Ext make farmers grow crops poorly	45 (33.9)	67 (42.1)	63 (47.4)	68 (42.8)	3 (2.3)	4 (2.6)	18 (13.5)	11 (6.9)	4 (3.0)	9 (5.7)	1176	4.01	1
Ext links farmers to government and other stakeholders	46 (34.6)	58 (36.4)	65 (48.9)	72 (45.3)	13 (9.8)	5 (3.1)	7 (5.3)	14 (8.8)	2 (1.5)	10 (6.3)	1176	4.01	1
Ext brings old technologies	22 (16.5)	63 (39.9)	86 (64.7)	75 (47.2)	10 (7.5)	7 (5.3)	11 (8.3)	5 (3.1)	4 (3.0)	6 (3.8)	1152	3.95	2
Ext agents know enough about what they do	35 (26.3)	56 (35.3)	58 (43.6)	78 (49.1)	5 (3.8)	6 (3.8)	32 (24.1)	15 (11.3)	3 (2.3)	4 (2.6)	1133	3.88	3
Ext equips farmers with uneeded agric knowledge	22 (16.5)	46 (28.9)	67 (50.4)	78 (49.1)	2 (1.5)	2 (1.3)	23 (17.3)	21 (13.2)	19 (11.9)	12 (7.5)	1050	3.60	4
It is rarely to see ext agents visiting farmers	27 (20.3)	56 (35.2)	45 (43.6)	73 (45.9)	0 (0)	2 (1.3)	35 (26.3)	22 (13.8)	26 (19.5)	6 (3.8)	1039	3.56	5
Ext agents visit farmers regularly	28 (21.1)	33 (20.8)	60 (45.1)	79 (50.0)	4 (3.0)	6 (3.8)	26 (19.5)	25 (15.7)	15 (11.3)	16 (10.1)	1024	3.51	6
Farmers get less assistance from ext in decision making regarding agriculture	17 (12.8)	13 (8.2)	44 (33.1)	51 (32.1)	7 (5.3)	6 (3.8)	41 (30.8)	55 (34.6)	24 (18.0)	34 (21.4)	819	2.80	7
Ext helps distribute inputs on time	8 (6.0)	17 (10.7)	27 (20.3)	32 (20.1)	2 (1.5)	3 (1.9)	34 (25.6)	37 (23.3)	62 (46.6)	70 (44.0)	650	2.23	8
Ext helps find markets for crops	3 (2.3)	8 (5.2)	18 (13.5)	29 (18.3)	4 (3.0)	11 (6.9)	71 (53.4)	44 (27.7)	37 (27.8)	67 (42.1)	622	2.13	9
Ext do not help farmers get loans and credits	2 (1.5)	0 (0)	5 (3.8)	11 (7.0)	7 (5.3)	16 (10.1)	32 (24.1)	55 (34.6)	87 (65.4)	77 (48.2)	501	1.72	10
Ext train farmers on crop value addition	0(0)	0(0)	3(2.3)	0(0)	5(3.8)	3(1.9)	36 (27.1)	53 (33.3)	89 (67)	93 (58.5)	396	1.36	11

Conclusions and Recommendations

This study aimed at assessing crop farmers' attitudes towards AESs in selected districts in Tanzania. Based on the findings it is concluded that a fair proportion of respondents had a favourable attitude towards AESs that are provided in the study area. Considering the argument made by Meijer *et al.* (2015) that a favourable attitude raises the probability of technology adoption while a negative attitude depresses it, these findings indicate the likelihood of farmers to accept the proposed interventions to improve AESs. The favourable attitude of farmers towards AESs indicates that any government's attempt to reform the extension system of the country should pay attention to those issues farmers felt are more important. For example, measures should be taken to ensure that AESs create a good link between farmers and other stakeholders; AESs should target improving crop production, and bring new technologies to farmers to enable an increase in agricultural production and productivity. Also, extension agents should be trained and be well equipped to better perform their job including visiting farmers regularly

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