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SMALL-SCALE COFFEE FARMERS' LIVELIHOOD CAPABILITIES AND ACCESS TO EXTENSION SERVICES IN HAI AND ARUMERU DISTRICTS, TANZANIA

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ABSTRACT

The study intended to examine the implications of livelihood capabilities on access to extension services among small-scale coffee farmers in Hai and Arumeru districts, Tanzania. The study used a cross-sectional research design in collecting data. Data collection methods included household survey, interviews, focus group discussion and documentary review. The findings revealed that, small-scale coffee farmers in the study area had not been provided with free extension services. Further, the findings show that livelihood capabilities among small-scale coffee farmers are associated with availability and frequencies of getting extension services. Also, it was found that small-scale coffee farmers with high livelihood capabilities were more capable in making their own arrangements on extension services acquisition, and outputs from their farms were higher than for those with no or low livelihood capabilities. The findings also revealed that small-scale coffee farmers with high livelihood capabilities and higher education were more knowledgeable on different agricultural extension related matters. It is recommended to the Ministry of Agriculture and Food Security in collaboration with the local government authorities to ensure extension services are made available by increasing the number of extension officers.

Key Concepts: *Extension Services, Livelihood Capabilities, Coffee and Small-Scale Farmers*

1. INTRODUCTION

World-wide, nations provide extension services to their people in order to help them improve productivity and finally their standard of living (Wambura *et al*., 2012). By 2010, extension services had covered more than one billion small-scale farmers globally (Isaya, 2015). It should be understood that extension services promote the transition of new innovations into concrete benefits to poor farmers in developing countries (Hellin, 2012). But despite the provision of extension services to small-scale farmers, the agricultural sector generally in Africa and in Tanzania in particular has not shown significant improvement in production and bettering peoples' lives particularly in rural areas (Kasie *et al*., 2012; Kyaruzi *et al*., 2010).

The above concern was also explained by Ekou & Alungat (2015) that although various governance reform approaches have been adopted to improve agricultural extension among smallholder farmers, still there is a major knowledge gap remaining regarding why desirable findings have not been achieved in most developing countries. In East Africa for example, smallholder farmers face problems such as low productivity caused by lack of access to market, credit and technology compounded by volatile food and energy crisis (Samson *et al*., 2015).

As pointed out by Isaya (2015), small-scale farmers have a critical shortage of information, inputs and extension services, and therefore, if agricultural information (through extension services) are made available, affordable and community members are encouraged to use modern farming methods, their productivity and income may double. The same argument was seconded by Mwaseba (2005): Ogunlade & Fataki (2006): Jeannie (2012) that agricultural productivity among small-scale farmers cannot be improved if stakeholders are not aware of information sources and how these can be brought to their doorsteps.

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According to Rwechungura (2017), the Tanzania economy's average growth rate is 7% per annum and the agriculture sector grows at less than 4% per annum hence, dropping to 5th place as a contributor to the Gross Domestic Product-(GDP). The government is trying to offer incentives to boost production but there is a critical lack of extension and advisory services on proper input usage. There is also slow rate of adoption of technology innovations such as the use of improved seeds, fertilizers and post-harvest technologies partly due to lack of extension services whereby 60 to 70% of households in the country have no access to extension services. However, there is a sound policy framework to support the provision of quality extension services but there is inadequate public and private investment in training, research and extension to ensure availability and affordability of extension services among the farmers mainly small-scale farmers.

Livelihood capability is one of the key determinants for the performance of agricultural sector among small-scale farmers. As a result, the improvement in agricultural sector determines substantially the livelihood conditions of small-scale farmers. Given other factors constant, small-scale farmers produce well if and only if they have access to extension services. Different authors such as Lienert & Burger (2015): Valdes-Rodriquez & Perez-Vazquez (2011): Qinzilbash *et al*., (2008) &Sen (2005) have defined the concept of livelihood capability differently. According to Valdes-Rodriquez (2011) the term livelihood refers to the way in which people earn income to affect for different basic needs such as clothes, food, shelter and medication; it reflects to a means of making a living which encompasses peoples' capabilities, assets, income and activities required to secure the necessities of life.

At the same time, the term capability according to Lienert & Burger (2015) refers to the ability to achieve the functioning to constitute for the better life; it also refers to the reaction potential to challenges and crises which reflects to the power or ability to do something or state of being capable. Therefore, for the sake of this study the definition by Lienert (2015) & Sen (2005) was adopted where by livelihood capability refers to the ability of small-scale coffee farmers in meeting their daily basic needs and their power in acquiring extension services of the required standards in terms of quality and quantity.

Agricultural extension refers to the process which facilitates transferring of knowledge and good practices to farmers (TCRA, 2011). In most developing countries, the available extension officers are fewer than the acceptable ratio to serve farmers. For example, in Kenya the ratio is 753 households: 1 extension officer while in Tanzania the situation is worse-above 1000 households: 1 extension officer (Lwoga *et al*., 2011). According to URT (2017), Tanzania Agricultural Extension policy states that in every village there should be an extension officer but in 2013 the need for extension officers was 15 082 and the available extension officers were 7974. Rutatora & Mattee (2001), extension services are essentially made to cater for farmers' problems and needs. Under Regional Administration Act 1997 and Local Government Act No. 6 of 1999, the responsibility for implementing extension services lies with the local government authorities. But to what extent this service is currently available in a sustainable manner in Tanzania is still questionable.

Extension services in developing countries and Tanzania in particular are being more dependent on donor funds through the Ministry of Agriculture or NGOs. As the government continues to face severe financial difficulties; funds for support services to agriculture including inputs and extension services are diminishing. But of recent, the landscape is changing in the provision of extension services in terms of key actors, approaches and management (Rutatora & Mattee, 2001). In this respect, provision of extension services in Tanzania can be categorized into three phases i.e. Post-independence (1961-1966): Post Arusha Declaration (1967-Mid 1980s) and the Economic liberalization era (Mid 1980s to date).

During the first two periods, efforts were aimed at transforming peasant agriculture to large scale and improve agricultural productivity and the government was the sole provider of all extension services under the so called "Public Services". From the mid-1980s public sector has been withdrawing from direct production and provision of goods and services which has led to the increase of private sector and NGOs participating in the production and marketing of agricultural produce including coffee (Sanga *et al*., 2013).

As a result, from the 1980s Tanzania has experienced different extension services providers who can be categorized into two groups namely; Public extension services providers (Ministry of Agriculture and Local Government Authority under the Ministry of Regional Administration and Local Government) and private extension services' providers (private agribusiness, Community Based Organizations-CBOs through farmers' groups, associations, co-operative societies and networks). The remaining extension services provider (donor supported projects) can play part for both public and private extension services' providers, (TCRA, 2011; Lwoga *et al.,* 2011; Isinika *et al*., (2005).

As stated by Tchouawou (2014), many developing countries' rural population is heavily dependent on agriculture as well as different social services for their livelihoods' support. Yet availability of adequate knowledge, improved technologies, inputs, financial services and other relevant services among small scale farmers remains to be a critical issue. As a result, there are still significant challenges in providing extension and advisory services such as insufficient funds in supporting public extension, poor resourcing, poor infrastructures, limited involvement of rural poor farmers, lack of appropriate strategy for effective research and adequate extension methods (World Bank, 2010).

According to Coulson *et al*., (2018): Mwamakimbula (2014): Sanga *et al*., (2013): Isinika *et al*., (2005), provision of extension services and inputs in Tanzania among small-scale farmers has not been smooth for three decades. The process has been facing several challenges such as few numbers of extension officers, limited required resources, extension staff not paying adequate attention on participatory approaches to problem solving, extension officers' poor communication, leadership and critical thinking skills, hence becoming ignorant of experiential approaches in solving problems. Other challenges are such as poor support from the government to the extension sector which lowers the effectiveness of extension agents and distance of extension officers' residences to their working stations. In most cases, extension officers live far from their working stations due to lack of decent accommodation and other basic needs within or nearby their working stations.

The study aimed at examining the association between livelihood capabilities and access to extension services among small-scale coffee farmers in Hai and Arumeru districts. Specifically, the study intended at examining the relationship between livelihood capabilities level and access to extension services for the past five years, and the type of extension service required against livelihood capabilities level among small-scale coffee farmers.

The study was guided by the Diffusion of Innovation Theory-DOI by Rogers (2003). The theory seeks to explain how, why and at what rate new ideas and technology spread among people or group of people in this case small-scale coffee farmers. The theory has so far been applied by different researchers in different fields such as agriculture, marketing, development intervention, social work and behavioural change and proved to be very useful (Zhang, 2015; Dearing, 2009). Therefore, it was applied in examining the association between livelihood capability and coffee farming extension services availability and affordability among small-scale farmers in this context.

The theory assumes that every farmer is an experimenter by him/herself and does not need experimentation stations to tackle problems. As a result, the theory has provided much of intellectual foundations for the research and extension efforts in farm management and productivity. The theory further explains that the diffusion of better agricultural production knowledge and skills is a major source of productivity growth and profit maximization among small scale farmers. The diffusion approach in agricultural development rests on the empirical observation of substantial differences in land and labour productivity among farmers and regions. In this view, the route to agricultural development can be attained through more effective dissemination of technical knowledge and narrowing of the dispersion of productivity among small scale farmers in different locations (Tagar, 2012).

DOI stresses that the end result of diffusion people must adopt new idea, behaviour or product as a part of the social system. In this respect, a person must perceive the idea, behaviour or product as new or innovative. Despite being such much useful, DOI has failed to generate rapid modernization of traditional farms or rapid growth in agricultural output. Furthermore, the theory doesn't foster a participatory approach towards

innovation adoption, doesn't take into account individual resources and differences or social support needed in order to adopt the new innovations but generally, the theory was good in examine the association between livelihoods' capabilities and extension services availability and affordability among small scale coffee farmers in this respect.

2. METHODOLOGY

The study was conducted in Hai and Arumeru districts in Kilimanjaro and Arusha regions respectively. Hai and Arumeru districts were selected due to their geographical conditions, long time involvement in coffee production, dependency on coffee by more than 50% of its households as a cash crop and major source of income and extreme deterioration in coffee production compared to other districts nation-wide (Coulson *et al*., 2018). During data collection, a cross-sectional research design was used as the method which allowed data collection from different groups of respondents at a time, gave room to make comparisons among different groups of respondents to see how dependent variable related to independent variables. The approach saved time and other resources required to accomplish the task.

The study used a mixed method approach (sequential transformative approach which encompasses the use of qualitative then quantitative or quantitative then followed by qualitative approach) to collect qualitative and quantitative data on the association of livelihoods' capabilities and extension services among small scale coffee farmers from primary and secondary sources. The required sample size was determined using the Rule of the Thumb approach by Al-Bayyati (1971). The approach states that a sample size of 30 respondents and above is statistically accepted for data analysis. The approach has been used by different researchers in different fields and proved to be useful (Hogg & Tanis, 2010: Aguinis & Harden, 2009: Carmen & Betsy, 2007). According to TCB (2017) report on coffee production, Hai and Arumeru districts had 1670 small scale coffee farmers producing an annual average of 100 kg. In this respect, Hai and Arumeru districts had 925 and 745 small-scale coffee farmers respectively.

Therefore, the Rule of the Thumb Approach was applied in this study to estimate a sample size of 250 respondents (small-scale coffee farmers). Only small-scale coffee farmers producing an average of 100 kg and above per year were considered in this study because if someone produces less than the fore-mentioned amount per year he/she couldn't not be considered as a small-scale coffee farmer in this case because the income generated from the sales cannot be sufficient to cater for his/her daily livelihood requirements.

Two wards in each district and two villages in each ward were purposively selected i.e. Masama East and Roo Ndoo in Hai district and Nkwarisambu and Akyeri in Arumeru district (Table 1). Selection of the wards and villages was done purposively because not all areas (villages and wards) produce coffee in Arumeru and Hai districts. After determining the sample size and accessing a register containing a list of all small-scale coffee farmers producing an average of 100 kg and above per year, simple random sampling technique was used to get the respondents required for the study.

Table 1: Sample size Distribution in Hai and Arumeru Districts

Ward	Number of Villages	Selected Villages	Number of Participants	Total
Masama East	2	Sawe	20	**55**
		Mbweera	35	
Roondoo	2	Modio	30	**75**
		Roo	45	
Nkwarisambu	2	Nkwarisambo	35	**60**
		Ndoombo	25	
Akyeri	2	Akyeri	40	**60**
		Sing'isi	20	
Total	**8**		**250**	**250**

Therefore, it was applied in this study to estimate a sample size of 250 respondents (small scale coffee farmers). Only small-scale coffee farmers producing an average of 100kg and above per year were considered in this study because if someone produced less than the afore-mentioned amount per year the income accrued from the

sales cannot be sufficient to cater for his/her daily livelihoods' requirement. In each district, two wards and four villages were purposively selected. After sample size determination, a simple random sampling technique was used to obtain the respondents. Methods of data collection included documentary review on extension services provision, focus group discussion and survey using questionnaire.

In order to have the livelihoods' capability levels; nine abilities were established through pilot study (household head ability to own a house(s), household head ability to buy clothes, household head ability to have three meals per day, household head ability to earn income apart from coffee, household head ability to pay for medical services, household head ability to own transport, household head ability to run business, household head ability to own livestock and household head ability to pay for children's tuition fees). The capabilities were then tested in the main data collection after assigning them scores on each capability. The scores were Yes = 1 and No = 0. After the data entry, total scores scored by each respondent established whereby the maximum score was 9 and the lowest score was 0. Basing on the scores, a median score was calculated to determine the group level formation. Finally, four levels established as depicted hereunder in Table 2.

Thereafter, a Cross-Tabulation was used to show the association between livelihoods' capability levels and extension services availability and affordability as recommended by Field (2009). Extension services were measured by considering two aspects i.e. availability of extension services and affordability of extension services whereby, Yes =1 implying available and No = 0 implying not available while the affordability was determined over 5 years period, whether they had acquired extension services or not; Yes = 1 if acquired (affordable) and No = 0 if not acquired (not affordable).

In order to ensure the content validity of the data collected, the pre-testing of questionnaire was done on 16 respondents in both Hai and Arumeru districts (eight respondents from each district; four respondents from each ward and 2 respondents from each village) a month before actual data collection. The pre-testing was done in order to test the data collection instruments, assess time for data collection, check availability of the study population, see how research team work together, test procedures for data processing and analysis and check if the findings make sense. Reliability of the data collected was determined by calculating the Cronbach's Alpha which is a measure of internal consistence that is how closely related a set of items are as a group. Cronbach's Alpha is considered to be a measure of scale reliability. In this case, the reliability coefficient is 0.6835=68.4%. The optimum value for the reliability ranges from 0.65 to 0.8 and the calculated findings were within the acceptable ranges hence making the data collected reliable.

3. FINDINGS AND DISCUSSION

The findings in Table 2 present four livelihood capability levels (no capability, low capability, moderate capability and high capability) respectively as depicted below.

Table 2: Livelihood Capability levels

Levels	Frequency (n)	Percent (%)	Capability Index
No Capability	23	9.2	0.0
Low Capability	98	39.2	0.1-4.44
Moderate Capability	46	18.4	5.0
High Capability	83	33.2	5.1-9.0
Total	**250**	**100.0**	

From the livelihood capability level (Table 2), the mean score findings were found to be 5.0 (18.4%) which was at moderate level implying moderate livelihood capabilities among the small-scale coffee farmers in the study area. Zero (0) in the livelihood capability level implied no capability at all and from 0.1-4.4 (39.2%) implied low capabilities among small scale coffee farmers. This implies majority of small-scale coffee farmers in Hai and Arumeru districts had low livelihood capability level. From 5.1to 9.0 (33.2%) considered to be high livelihood capability level among small scale coffee farmers. Thereafter, chi-square and cross tabulation were

used for determine associations between livelihoods' capabilities and extension services among small scale coffee farmers. Findings obtained were presented using tables and figures.

3.1 Status of Extension Services in Relation to the Livelihood Capabilities

Community members in Hai and Arumeru districts had different views with respect to the status of extension services provision and the livelihood capability among small-scale coffee farmers in their area. The table 3 findings show the status of extension services in relation to the livelihood capabilities among small scale coffee farmers.

Table 3: Livelihood capability levels against provision of extension services

Never received extension services in the past 5 years	Livelihood Capability Levels				**Total**
	No Capability	Low Capability	Moderate Capability	High Capability	
Strongly Agree	01	15	06	18	40
	2.5%	37.5%	15.0%	45.0%	100.0%
Agree	00	00	00	00	**00**
	00	00	00	00	**00**
Undecided	05	13	19	17	54
	9.3%	24.1%	35.2%	31.5%	100.0%
Disagree	00	00	02	01	03
	0.0%	0.0%	66.7%	33.3%	100.0%
Strongly Disagree	17	70	19	47	153
	11.1%	45.8%	12.4%	30.7%	100.0%

Chi -square (26.171; p=0.0021) likelihood ratio (25.746; p=0.0021)

Findings in Table 3 indicate that among those who strongly agreed to have acquired extension services for the past five years, 2.5% had no capability at all, 37.5% had low capability, 15% had moderate capability and 45% had high livelihoods' capability levels. The chi-square findings were *26.171; p=0.0021.* This implies that there is an association between extension service provision and livelihood capabilities among small scale coffee farmers and the findings were statistically significant at 0.05 or 5% level. For those who were undecided on whether they had received extension services for the past five years, 9.3% had no capability at all, 24.1% had low capability, 35.2% had moderate capability and 31.5% had high capability levels. Further, another category of respondents disagreed to have received extension services for the past five years whereby, 66.7% had moderate capability and 33.3% had high capability levels.

In addition, there were also respondents who strongly disagreed to have received extension services for the past five years whereby, 11.1% had no capability at all, 45.8% had low capability, 12.4% had moderate capability and 30.7% had high capability levels. As it can be visualized from the above findings, community members with high livelihoods' capability levels agreed strongly to have received extension services in the past five years. It was later learnt that some small-scale coffee farmers used their own income to acquire extension services as it was reported by respondents in Mbweera Village during a focus group discussion that:

> "*…in most cases extension services are not available but at the same time, the advice from extension officers is very fundamental for us small-scale farmers…..as a result, we are obliged to pay for extension services so that we can be properly directed on what to plant, when to plant, how to take care of the crops, how to harvest and finally how to store the produce…*" (FGD- Mbweera Village).

The above quotation implies that there is a critical shortage of extension services among small scale coffee farmers which hinders smooth production and profit maximization. As a result, the output from the farm is

always small, hence affecting other livelihood requirements such as health and education services acquisition. These findings concurred with TCRA (2011): Lwoga, *et al*., (2011): Coulson *et al*., (2018) which found out that in Tanzania extension services is among the critical challenges facing small scale farmers whereby, farmers are producing very little not because they want but because they are compelled by the prevailing circumstance.

During the interview with key informants it was revealed that majority of small-scale coffee farmers are not aware of different agricultural extension related issues including proper pesticides use, fertilizers application or seedlings selection. From the findings, (YES/NO RESPONSES) it was revealed that more than 70% of the respondents pointed out that they are not aware of agricultural policies because they are not informed by either the government or non-governmental organisations. Sometimes they are used to see things happening, like, price decreasing or increasing without any explanation. For the past couple of years, for example, people have been talking of Kilimo Kwanza initiative but community members declared to know nothing about it. It was further learnt that only a quarter (25%) of the respondents interviewed were aware of some extension services related policies.

It was also found out that those who were aware had higher livelihoods' capabilities or they had higher educational levels i.e. secondary education and above. On the other way around, the findings show that there is a very close connection between community members' awareness on agricultural extension policies and their levels of education or livelihoods' capabilities. During focus group discussion in Sawe Village participants stated that:

> *"…we are just seeing changes happening in terms of price or input provision but we don't know why all these changes.....at the same time, nobody is around to clarify for us on what is happening, why is it happening and how are we going to benefit or be affected by the changes.....worse enough, some of us don't know how to read and write....we have heard also some information is aired out through TV and Radios but we don't have these facilities and therefore, we are victims of the circumstance…*" (FGD-Sawe Village).

Through personal observation, it was revealed that few small-scale coffee farms which were performing well are those from the families which could pay for extension services and able to acquire the required farm inputs but majority of coffee farms in Hai and Arumeru districts are not performing well and the output is not impressing. During focus group discussion in Modio Village participants stated that:

> *"…in a period of five years we may be visited once or not visited at all…..if visited by extension officer or any public officer there must be a very strong reason hidden behind the scene apart from providing extension services to farmers such as the time approaching election or national torch rallies…"* (FGD-Modio Village).

This implies that in the contemporary time small scale coffee farmers are producing without the guidance of extension officers or public officials. As a result, the output is always small to cater for their daily basic requirements such as food and health services. From the historical perspective, small scale coffee farmers have been receiving regular advices from agricultural officers and extension officers. This has enabled them to maximize production, profits and managing their daily livelihoods' requirements through coffee.

3.2 Type of Extension Services Required Against the Livelihoods' Capability Levels

Small scale coffee farmers in Hai and Arumeru districts were found in-need of varieties of extension services including among others better production skills, seedlings caring skills, marketing information access, pesticide application skills, fertilizers application skills and coffee processing skills. Table 4 present findings on the type(s) of extension services required by small scale coffee farmers against the livelihood capability levels in order to improve their productivity.

Table 4: Type of Extension Service Required against Livelihood Capability Level

		Livelihood Capability Levels				TOTAL
		No Cap.	**Low**	**Moderate**	**High**	
Better production methods	Count	23	89	42	80	234
	Percent	9.8%	38%	17.9%	34.2%	100%
Seedlings caring	Count	11	65	31	36	143
	Percent	7.7%	45.5%	21.7%	25.2%	100%
Marketing information access	Count	8	41	25	28	102
	Percent	7.8%	40.2%	24.5%	27.5%	100%
Pesticides usage	Count	15	58	30	46	149
	Percent	10.1%	38.6%	20.1%	30.8%	100%
Fertilizer usage	Count	15	46	24	33	118
	Percent	12.7%	39%	20.3%	28%	100%
Coffee processing	Count	00	00	00	01	01
	Percent	0%	0%	0%	100%	100%

Chi-square *(0.368; p=0.0231) likelihood ratio (0.395; p=0.0231)*

The Table 4 findings indicate that 47.8% of the respondents with No and Low livelihoods' capabilities were in need of better methods of production so as to improve their productivity. With regard to seedlings, likewise 53% of respondents among small scale coffee farmers with No and Low livelihoods capabilities were critically in need of this service in order to modernize their production and hence maximizing the profits. In addition, 49% of small-scale coffee farmers with No and Low capability were in need of marketing information access while 38.6% of small-scale coffee farmers with moderate livelihood capabilities were in need of pesticide usage extension services.

Furthermore, 51.1% of the respondents among small-scale coffee farmers with limited and low livelihoods' capabilities were in need of fertilizers usage extension services. The chi-square findings were found to be 0.368; p=0.0231 meaning that there was a very close association between the livelihoods' capability level among small-scale coffee farmers and the type of the extension services required in order to improve their productivity and maximizing the profits, and the findings were statistically significant at 0.05 or 5% level.

Therefore, as it can be depicted from Table 4 findings; for small scale coffee farmers to produce better, maximize the profits and being able to meet their basic requirements they have to be provided with better production methods, seedlings caring skills, marketing information access, better pesticide usage knowledge, fertilizers application knowledge and coffee processing skills. In the current situation, in most cases to obtain the above services a small-scale farmer has to carter for the cost though at the same time ability to effect for the cost depends on livelihood capabilities of the respective small-scale coffee farmer. Hence, there is a very close relationship and interdependence between the type of extension service needed and the ability of the one who is in need of that service.

Due to their low economic situation (low livelihoods' capabilities), majority of small-scale coffee farmers are incapable of paying for extension services even if these services are available. During a focus group discussion in Modio Village, it was stated that:

> "*…frankly speaking extension services in general are rarely available…free extension services are no longer in existence practically and to make the situation worse, majority of us have limited income to cater for extension services' costs and other daily basic needs for our survival….last month every household paid ten thousand (10, 000/=Tsh) to the extension officer under the so called fuel cost so that he could come to our farms to advise us …*" (FGD-Modio Village).

From the above quotation, it can be vividly seen that small-scale coffee farmers are encountering a critical lack of extension services which limits their productivity and profitability at large. The findings have shown that the situation is more alarming among poor families but for those with better income they do acquire extension services using their own sources. In other words, livelihoods' capabilities among small-scale coffee farmers

determine substantially the acquisition of extension services. In all villages visited during data collection, there were no extension officers. Through key informants' interview and personal observation in both Hai and Arumeru districts, it was revealed that extension officers were placed in Ward headquarters and assigned other duties such as acting as ward executive and wards development officers leaving aside their primary role i.e. Provision of extension services to farmers. This has made some extension officers to be uninformed, ineffective and inefficient when it comes to problem solving among small scale coffee farmers mainly due to lack of experiences and exposure on farmers problems.

It was also learnt during focus group discussion that there is a continuous tendency of transferring extension officers after every one to three years of their appointment which limits their creativity and problem-solving skills through experiential approach. As a result, the situation has continued placing small scale farmers in low livelihoods' capabilities in acquiring different basic needs such as decent medical services and nutrition.

3.3 Theoretical Implication of the Findings

The findings on the association between livelihoods capability and extension services availability and affordability among small scale coffee farmers confirm the Diffusion of Innovation theory to be quite true and very much applicable towards improving productivity and livelihoods among small scale farmers. The Diffusion of Innovation theory stipulates that it is easier for innovation and technology to spread among the people provided even if there is a starting point. Small scale farmers are experimenter by themselves and therefore if enabled it is possible to imitate production skills and technology from nearby farmers.

The findings have shown that livelihood capabilities determine substantially the type and quality of extension services among small scale coffee farmers. Hence if small-scale farmers are enabled, diffusion of innovation theory is very much applicable despite the majority having low skills, low knowledge, low assets, low education and low livelihoods' capability levels which partly incapacitate them from adopting new innovations as recommended by Diffusion of Innovation Theory.

The findings obtained from this study are of its own uniqueness by addressing two critical issues which affect small-scale coffee farmers- livelihood capabilities and coffee farming extension services availability and affordability. There are several studies done in coffee industry on small scale farmers but no study so far has been done to address the two aspects (livelihood capabilities and coffee farming extension services availability and affordability among small-scale farmers) mentioned above. Coffee stakeholders have been complaining for fluctuations in coffee production and downfall of the small-scale coffee farmers' livelihoods' capabilities; this is the study which has filled the gap by showing the interdependence and interrelationship between the two. In this respect, these findings have contributed to Diffusion of Innovation theory by adding to the existing body of knowledge the component of livelihood capabilities when adopting the right extension services (innovation) among small scale coffee farmers.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The study findings were on the implications of livelihoods' capabilities on extension services availability and affordability among small-scale coffee farmers in Hai and Arumeru districts, Tanzania. Based on the findings, the following conclusions were drawn. Livelihood capabilities among small-scale coffee farmers in the contemporary time substantially associated with the quality and quantity of extension services in terms of availability and affordability. Therefore, small-scale farmers with high livelihood capabilities have a greater chance of improving their coffee production compared to those with low livelihood capabilities because they can acquire the extension services through their own initiatives.

Those with moderate and high capability usually do receive extension services mainly through their own private arrangements using their own sources of income. Despite unavailability of extension services, small-scale coffee farmers in the study area acknowledged the importance of extension services in their day to day farming activities. They further pointed out various challenges which encountered by them for not having extension

services such as inability to have proper seedlings, fertilizers and pesticides. From the findings it is concluded that the majority of the small-scale coffee farmers who have higher livelihood capabilities have also higher education levels, and therefore, they are more knowledgeable on extension related matters than the rest of the community members with the promising production.

4.2 Recommendations

Based on the manuscript findings and conclusions, the following can be recommended in order to ameliorate the extension related problem among small-scale coffee farmers in Hai and Arumeru districts; First and foremost, it was pointed out that there is an acute shortage of extension services which not only lowered the output from the farms but also reduced the small-scale coffee farmers livelihoods' capabilities. Therefore, there is a need for the government and other stakeholders like AMCOS and TCB dealing with coffee production to ensure small-scale farmers are provided with extension services so that they can actively and profitably take part in the agricultural production related activities.

The Ministry of Agriculture should ensure her promise in the Extension Service Policy Provision of having one extension officer per village is implemented. Above all, extension officers should not be re-categorized to perform other duties and leaving small-scale farmers without any advisory service; instead, they have to be allowed to stay longer in one area so as to gain experiences and understanding on different small scale farmers' problem(s) so as to provide better address towards farmers' problems.

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