

2014-07

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International Journal of Information and Communication Technology Research

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Access to Agricultural Market Information by Rural Farmers in Tanzania

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ABSTRACT

Access to agricultural markets and agricultural market information is essential for participating in agricultural markets. A skilled and well-equipped participant benefits more in the agricultural marketing chain. Due to poor access to agricultural markets, rural farmers have for so long depended on subsistence farming living other participants (traders, consumers, intermediaries) benefiting more. Poor access to markets by these rural farmers is attributed by poor road infrastructure, lack of transporting means, and broadly by lack of agricultural market information. Due to lack of market information such as price of produce at the markets, quality and quantity of produces required at the markets, rural farmers negotiate on prices of their produce based on the information provided by traders. These factors significantly reduce the bargaining power of rural farmers and thus promote development of uncompetitive markets. It is envisaged that if rural farmers get a fair share of their produce, they can shift from subsistence farming and consider agriculture as their main economic activity. Dependence on radio programs and mobile phone calls to get agricultural market information has not well benefited remote rural farmers. This study proposes to establish a platform of framework where agricultural market participants can share market information. With this platform, real-time market information can be made available to market participants. The overall goal is to ensure farmers are assisted to get a fair share of their produce.

Keywords: *Agricultural markets, market access, agricultural market information, small-scale farmers*

1. INTRODUCTION

As in other Sub-Sahara developing countries, agriculture in Tanzania has been a mainstay for the majorities, providing employment, export earnings and even contributing greatly to aggregate growth and Gross Domestic Product (GDP). The agricultural sector comprises of crops, livestock, forestry and hunting sub-sectors. The sector is seen as the main vehicle in the national economic strategies to combat poverty and enhance economic development. About 80 percent of Tanzanians depend on agriculture for their livelihoods [1, 2]. The sector contributed approximately 35 percent of foreign exchange earnings between 1999 and 2006, and in 2006, it contributed about 75 percent of total employment and 26.2 percent of the GDP [2]. These figures suggest that any improvement in agriculture will have an impact in rural livelihoods and the nation at large. Despite of all these, the agricultural sector is dominated by small-scale farming and a large proportion is for subsistence.

Most small-scale farmers live in rural areas where they conduct agricultural activities and where poverty is a phenomenon. Reduction in poverty in developing countries will depend on the performance on this agriculture sector [1]. The government has established different strategies and policies to transform agriculture and to ensure efficient performance and enhanced productivity. In Tanzania, policies and plans like “agriculture is the mainstay of the economy” and “Kilimo Kwanza” (agriculture first) have not resulted to improved agricultural productivity and enhanced livelihood as claimed before [1]. The National Development Vision 2015, the main national development strategy in Tanzania, places considerable emphasis on the sector and envisages that by 2025 the economy will have been transformed from a low productivity agricultural economy to a semi-industrialized one led by modernized and highly

productive agricultural activities that are integrated with industrial and service activities in urban and rural areas [3].

This study seeks to examine the challenges restricting rural farmers in accessing agricultural markets and marketing information in Tanzania. Different scholars have argued that access to markets and marketing information can help develop competitive markets which can improve the economy of both the producers and the nation at large. Different studies have revealed that smallholder farmers in Tanzania were not prepared to respond to free markets challenges. This is because farmers have little access to markets and also lack marketing information [4]. To help these farmers access the markets, it is encouraged the development of supporting market institutions and provision of adequate essential public goods and services such as technological and information services, marketing services, etc. [5]. Different studies [2, 4] acknowledged the necessity of helping rural smallholder farmers to access markets. Accordingly, this may involve collection of related marketing information, processing them, storing them and disseminating them to the intended beneficiaries. This will eventually link smallholder farmers to markets.

2. RELATED WORKS

In recent years, the importance of small-scale farmers in agricultural sector in developing countries has been recognized and acknowledged. Different schools of thought are emerging aiming at boosting the agricultural activities of these smallholder farmers. Scholars [e.g. 6, 7-9] argued that for agricultural development to be achieved, it is essential to engage the overwhelmingly majorities of smallholder farmers who live in rural areas. These scholars argue that agricultural development has a strong multiplier effects and that agriculture can aid other



sectors by providing employment, materials etc. Other scholars [e.g. 10, 11, 12] revealed that smallholders-led economy is obstructed by lack of market access. The proponents of this thought strongly argue that effective market access can lead to increased incomes and food security, more rural employment, and sustained agricultural growth. Another study [13] supports the market access scholars by narrating that greater agricultural markets means increased trade and from increased trade comes greater income growth.

Market access is crucial in smallholder development because it creates the necessary demand, offers remunerative prices, thereby increasing smallholder incomes [12]. The concept of market access or access to markets is broad and has as many definitions as practitioners and is used interchangeably [13]. This study describes market access as the sum total of all skills acquired through experience or training that enable a farmer to get and maintain regular customers to his/her produce [14]. In other words it is a long term marketing relationship between a seller and a buyer. Better access to market can result in expanded production and the adoption of productivity enhancing technologies [12]. Thus improving market access is central in efforts at developing small-scale agriculture for poverty reduction.

Improvement in market access can be achieved through coordinating various market actors, players and the necessary supporting services. Access to markets can also be affected by dissemination of market information. A lack of timely and accurate information to market participants contributes to poorly functioning markets while access to timely and accurate market information is an important element for transforming markets to competitive ones [15]. Disseminating timely and accurate information to market participants may serve both to improve production incentives for agricultural producers, and to drive down prices for consumers [16]. Improving farmer and trader awareness of prices in various markets throughout the country promotes grain system efficiency by encouraging grain flows from relatively surplus to relatively deficit areas, thus helping stabilize prices over space; improving farmers' decisions and confidence regarding what to plant, how much to invest, and where and when to market their produce; and promoting a more competitive marketing system, which will benefit both producers and consumers [15].

Reliable information on variable market conditions enables for correct decision-making and planning. For example, price flexibility may reflect both supply and demand and seasonality in production and provides producers with incentives to adapt their production to market requirements [17]. Another study suggested that price increases may signal food supply shortfalls in certain areas, and give an early warning of the possible need for food relief while low grain prices may signal season with good harvests [15]. Increasingly, studies [18-20] are suggesting that there is a potential positive relationship between the increased flow of information and agricultural development. All these views support the '*diffusion of innovation*' model [21-23] which explains that diffusion is the process by which an innovation is communicated through certain channels over

time among the members of a social system. According to this model, in any social system, innovation is first adopted by a small but highly innovative group of progressive farmers characterized by owning large farms, high levels of education and mobility with the outside world and frequently in contact with sources of information [20]. The innovation then trickles down from progressive farmers to farmers with medium socio-economic status and finally, innovation spreads throughout the social system until most farmers adopt it [20]. The basic argument in this model is that the dissemination of information leads to agricultural change and development through the adoption of new technologies or ideas, or improved farming practices.

But what is agricultural market information or simply market information? In a review of the theory and practice of marketing information provision in developing countries, it can be *distinguished* between *market* information, which basically consists of data on prices and (sometimes) quantities, and *marketing* information [17]. The latter is "a much wider concept, which is likely to include details on potential market channels, payment requirements, packaging, quality and a whole host of information required by a producer to make a successful sale, including market information. Sometimes the two terms are used synonymously as in this study. The agricultural marketing information is generally used in a number of ways. In a study to assess the agricultural market information needs to smallholder farmers in Zambia, authors [24] suggested that the information is mainly required to make policy decisions (for public institutions and government departments); to monitor changes in the economy; and to assess the food security situation in the country. Marketing information is also vital for relief agents as it provides indications of sources of surplus food and the prices prevailing. Non-governmental organizations also require marketing information to advise the farmers on possible income prospects for each farming activity, as well as promotion of different cropping patterns as supported by price trends, etc. [24].

Back to the *diffusion of innovation* model, in the process of adoption, the various channels of communication such as mass media become important at different stages of the adoption process [20]. For example, while the radio is very important at the awareness creation stage, the extension agent becomes a critical source of information during the adoption itself. The diffusion of innovation model has therefore had a major influence on the way information is disseminated to end-users like farmers. It is critically insisted that one of the preconditions for a market economy is that correct information on market conditions must be available and, within reason, accessible to all [17].

Despite all the efforts to boost agricultural productivity in developing countries, still smallholder farmers in rural areas have remained poor. Some studies [15, 25-28] have associated this situation as lack of market access and market information. Surprisingly, some authors [29] called this lack of information, or situations of asymmetric information, a '*norm*' in developing countries. Poor farmers are faced with many challenges when



trying to develop access to markets and thus improve their livelihoods. In a study to link farmers to markets, authors [30] found that smallholder farmers lack access to relevant information and knowledge and to communication technologies, and they have no linkage with other key people in the market chain, including processors, traders, and consumers. As a result of this poor farmers were subjected to market fluctuations and received only low prices for their products. Farmers responded to low prices by cheating, which further increases inefficiencies along the market chain [30]. Poor access to markets is mirrored by poor access to all kinds of rural services and it is felt more acutely in rural areas as due to lack of sustainable strategies to improve market access [26]. As a result farmers in remote areas are always poorly served by agricultural traders and are often obliged to accept seemingly unattractive prices for their produce [26]. Again, it is stressed that improving access to market information may help farmers' choice of what to produce, how much to sell, where to sell, and the prices farmers receive for their output [29].

Agricultural markets in developing countries are fragmented and highly unorganized. Due to this, a direct link between producers and traders might be missing, leading to the introduction of intermediaries [28]. Intermediaries often provide this important link, negotiating the prices with the farmers and delivering the produces to the markets and traders. The presence of intermediaries (also known as 'middlemen' or 'itinerant buyers') has not been taken positive by many. Intermediaries constitute a "real face" in the otherwise "hidden hand" of the market [31]. Some studies have indicated that intermediaries/middlemen fulfill important marketing functions in the marketing system acting as traders, distributors and providers of agricultural produces. A study to explore the exploitation of cassava growing farmers by middlemen in Africa concluded that prices of cassava were more stable in Nigeria because of the more elaborate involvement of middlemen, which encouraged competition [32]. Other scholars [27] perceive middlemen as parasites exploiting smallholder farmers by taking a large share of their benefit accrued from the sales of produces by taking advantage of small farmers' unawareness of market prices. There are mixed results suggesting that some middlemen are fair while others are exploiting farmers, though middlemen are better informed about market conditions [33].

3. RESEARCH APPROACH

3.1 Description of the Study Area

This study was conducted in three districts in Tanzania, namely Hai in Kilimanjaro region, and two neighboring districts, Mvomero and Kilosa, both in Morogoro region. Two villages were selected and involved in this study from each district. In this respect, *Sonu* and *Mbweera* were selected from Hai, *Dumila* and *Chabima* were selected from Kilosa, and *Makuyu* and *Dibamba* were selected from Mvomero. The districts were selected as they are among the big producers of food crops in Tanzania as a result of their fertile land as well as good seasons accompanied with good rainfall. Food produce from these regions are supplied and consumed in big cities in Tanzania. The

economies of these districts are dominated by agriculture and the allied activities. The major activities include small-scale farming (food and cash crops production – subsistence farming), and cattle keeping (mainly indigenous livestock). Maize and rice are the major staple food crops grown in Mvomero and Kilosa districts. The two districts, Kilosa and Mvomero, also produce abundantly tomatoes and vegetables and grow cash crops like simsim and sunflower for seed oil. Hai district produces maize, beans and bananas as food crops and also grows coffee as cash crops. Modern dairy farming is practiced in Hai district.

3.2 Data Collection Method

This study is based on data and information collected from the three districts in Tanzania. In order to capture the data for this study, different techniques were employed. Extensive literature review was carried out to find what should be done during the study. With the help of agricultural field officers, two villages were identified from each of the three districts to be included in the study. To capture the agricultural market access data and agricultural information, small-scale farmers were purposively selected as key informants based on their knowledge and understanding of the subject matter and their availability. Information from these small-scale farmers was collected through structured questionnaires and personal discussion. Information was also collected from a few marketing intermediaries like local food traders and collectors, food traders, and consumers. A semi-structured interview was employed to few selected key informants in order to give a clear elaboration and picture of the subject matter. These interviewees were purposively selected based on the understanding of the subject matter and the experience on agricultural activities including agricultural marketing. The researcher had an opportunity to visit and observe physically the real situation of some claimed issues during data collection.

4. FINDINGS AND DISCUSSION

4.1 Characteristics of Respondents

Respondents of this study were small-scale farmers. **Table 1** below summarizes characteristics of respondents based on their education level categorized on gender. During data collection, gender was not emphasized rather, the understanding and knowledge of the subject matter was considered. A total of 216 respondents were involved in the study, 76 (35.2%) from Kilosa, 59 (27.3%) from Mvomero and 81 (37.50%) from Hai. Based on gender, 126 (58.3%) were males and 90 (41.67%) were females. Majority of respondents were standard seven leavers (144, 66.67%) and a few were form six leavers. The characteristics suggested that majority of small-scale farmers have up-to form four education level. A few form six leavers and undergraduate respondents were employees working in the respective villages.

Further, majority of respondents consider agriculture as their main occupation (195, 90.3%) and a few are engaged in other activities such as business (11, 5.1%) and employee (10, 4.6%). A few respondents (21, 9.7%) considered agriculture as their

second occupation. Small-scale farmers are also engaged in other economic activities like doing small business, business, livestock keeping, and craftsman.

Food production in the three districts is depicted in **Table 1** under section (c). These small-scale farmers heavily produce staple food like maize and rice. Maize is grown in all the three

districts while rice is abundantly grown in Kilosa and Mvomero districts. Some years back, coffee was the main cash crop in Kilimanjaro region, but recently small scale farmers have shifted to maize and banana production. All these produce, maize and rice and banana are considered as both food and cash crops. Sesame is also cultivated in Kilosa and Mvomero as cash crop for production of seed oil.

Table 1 Characteristics of Respondents

(a) Education Level												
	Did not complete standard seven		Standard Seven		Form Four		Form Six		Undergraduate		R	%R
	M	F	M	F	M	F	M	F	M	F		
Kilosa	4	8	37	18	7	2	0	0	0	0	76	35.20
Mvomero	2	3	23	22	5	3	1	0	0	0	59	27.30
Hai	4	2	20	24	17	6	2	1	4	1	81	37.50
Total R*	10	13	80	64	29	11	3	1	4	1	216	100.00

(b) Occupation								
Main Occupation	R		%R		Other Activities			
	R	%R	R	%R		R	%R	
Agriculture	195	90.3			Small Business	57	26.4	
Business	11	5.1			Business	19	8.8	
Employee	10	4.6			Agriculture	21	9.7	
Total R	216	100.0			Craftsman	14	6.5	
					Livestock Keeping	3	1.4	
					Total R	216	100.0	

(c) Crops Produced					
	District			R	%R
	Kilosa	Mvomero	Hai		
Maize	74	52	77	203	94.0
Rice	47	51	0	98	45.4
Banana	8	6	73	87	40.3
Beans	7	0	25	32	14.8
Sesame Seed	20	9	0	29	13.4
Coffee	0	0	20	20	9.3

R* = Respondents

4.2 Access to Markets

Strong links to agricultural markets for rural small scale producers are essential to increasing agricultural production, generating economic growth in rural areas and reducing hunger and poverty. Improving these links boost productivity, increasing incomes and strengthening food security. Better access by small producers to markets means that they can reliably sell more produce at higher prices. This in turn encourages farmers to invest in their own businesses and increase the quantity, quality and diversity of the goods they produce.

Based on selling point, respondents identified that they sell their produce at the farm, at home or at the markets. At home, respondents usually sell their produce direct to available local consumers and local dealers, and to traders or even at the

available local markets. Local dealers normally collect the produces and sell them to distant markets or to traders. In very rare cases, local dealers purchase produce on credit from farmers. Traders usually visit the village and with the help of local dealers or their established links, collect and purchase the produces for sell to markets at towns and cities.

Table 2 Selling Point

	Farm		Home		Market	
	R	R%	R	R%	R	R%
Kilosa	6	2.8	66	30.6	15	6.9
Mvomero	5	2.3	55	25.5	2	.9
Hai	19	8.8	23	10.6	73	33.8
Total R (R%)	30	14	144	67	90	42

Results from **Table 2** revealed that majority of respondents sell their produce at home (Kilosa 30.6%, Mvomero 25.5% and Hai 10.6%). The results also showed that few respondents from Kilosa (6.9%) and Mvomero (0.9%) while majority of farmers in Hai (33.8%) sell their produce at the markets. Low percentage of farmers indicated that they sell their produce at the farm (Kilosa 2.8%, Mvomero 2.3% and Hai 8.8%). Farmers in Hai prefer to sell their produce at the market rather than selling at their homes. Farmer in Hai also indicated that they prefer to sell their bananas at the farm or at their homes due to the limitation of transportation. Coffee growers in Hai usually sell their produce to single cooperative union, the Kilimanjaro Native Cooperative Union (KNCU). Due to changes in crop patterns, farmers in Kilimanjaro (including those in Hai) have favoured maize and rice production and thus have abandoned their coffee farms in favour of maize and rice [34]. At some villages, there are local markets that cater for a number of neighboring villages. These village markets may even emerge at cross-roads or small concentrations of households to facilitate exchange of products among farmers. Well established formal markets are also available for farmers to send their produce for sell.

4.3 Use and Access of Agricultural Market Information

Access to agricultural market information is another important aspect to agricultural development. Use of accurate and timely agricultural market information enhances market performance by improving the knowledge of market actors. Farmers are assisted in planning production to meet market demand and negotiate better on prices traders. For so long, farmers have depended on their fellows in getting agricultural information. Farmers learned the prevailing prices of produce from their fellows, consumers or even traders. Based on access to agricultural information (including marketing information, climate information, agricultural inputs, best farming exercise), respondents identified the media they use in accessing such information. Results from **Table 3** revealed that rural farmers heavily depend on the radio and mobile phones in accessing information. 83% of respondents indicated that they listen to the radio for getting different information including agricultural market information and 75.9% of respondents indicated that they depend of mobile phones for getting and disseminating information including agricultural market information. The communication service is provided by the mobile companies such as Vodacom, Tigo and Airtel. Rural farmers have little access to newspapers and televisions. Results also indicate that in village meeting it is very rare to discuss issues related to agriculture though it is their main economic activities.

Table 3 Media of Communicating Information

	Radio		Mobile Phone		Newspapers		Television		Village meeting	
	R	R%	R	R%	R	R%	R	R%	R	R%
Kilosa	71	32.90	56	25.90	13	6.00	3	1.40	0	0.00
Mvomero	46	21.30	46	21.30	8	3.70	9	4.20	8	3.70
Hai	64	29.60	62	28.70	18	8.30	22	10.20	3	1.40
Total R (R%)	181	83.8	164	75.9	39	18	34	15.8	11	5.1

4.4 Knowledge of Rural Farmers in ICTs

Knowledge of rural farmers on the recent technologies of information and communication technologies (ICTs) using computers and their associated Internet services was also assessed. The results are depicted in table 4 below.

Table 4 Knowledge on ICTs

	Respondents			
	Not knowledgeable		Knowledgeable	
	R	R%	R	R%
Computer	186	86.10	25	11.60
Internet	176	81.50	32	14.80

Results indicated that a few respondents have knowledge of using computers and the associated technologies of the Internet. Further, majority of the youths indicated they accessed the Internet through their mobile phones. Poor access to computers and the Internet may be attributed by lack of electricity in rural areas as compared to towns.

5. CHALLENGES IN ACCESSING MARKET INFORMATION

Access to agricultural markets by small-scale farmers is essential as it is translated to more gains by these rural farmers. This access may create a strong link between producers and

consumers for the benefit of both parties. Farmers may be linked to regional, national and even export markets. The linkage may enable rural farmers to increase agricultural production and thus generating economic growth in rural areas. Further, the linkage enables farmers to sell their produce at higher prices which in turn encourages farmers to invest in their own businesses and increase the quantity, quality and diversity of the goods they produce. More generally, the linkage and access to agricultural markets by rural farmers may stimulate investment, production and trade in agriculture by making agricultural market access conditions more transparent, predictable and competitive; establishing or strengthening the link between regional, national and even international agricultural markets; and thus relying more prominently on the market for guiding scarce resources into their most productive uses both within the agricultural sector and economy-wide.

Access to markets by rural communities is an issue which is at head now. It is evident that rural farmers have little access to agricultural markets as compared to other market participants like food suppliers, collectors and traders. A number of constraining factors can be identified, including physical access to markets; structure of the markets; and producers' lack of skills, information and organization.

5.1 Physical Access to Markets

Access to formal markets where farmers can sell their produce is an issue and as a result small-scale farmers depend on available informal street and weekly basis traditional open markets. Other markets may emerge at the junctions to the main roads where small-scale farmers can meet traders for selling their produce. Farmers usually send their produce to these markets to meet available consumers and small-scale traders. Some farmers sell their produce at their homes or at the farm. At these markets there are no formal measurements and farmers use traditional measures in selling their produce. Due to lack of formal markets, traders and their agents (i.e. middlemen or intermediaries) move around the villages to collect and purchase produces. Traders usually purchase produce on cash while their agents or middlemen may purchase the produce on credit. Produce from these rural areas are sent to town markets where they are sold to consumers at available markets.

Access to markets by small-scale farmers is affected by some factors including distance to travel, road conditions, means of transport and even volume of produce to send to markets. **Table 2** above reveals that most farmers sold their produce at home and nearby markets mostly as a result of failing to reach the markets. For example, the nearby big maize market, Kibaigwa, is about 65km from Dumila in Kilosa and Mvomero, the most maize producing areas in Morogoro. Due to poor roads in villages, farmers are forced to sell their produces at their homes and at the village markets. These small-scale farmers also indicated that they sell their produce when needs arises and thus find it very expensive and difficult to transport small volumes to distant

markets. Farmers may benefit more by visiting the nearest available markets. Farmers from Sonu and Mbweera villages in Hai district, indicated that they prefer to visit the nearest available markets, Sadala and Boman'gombe, which are about 5-6 km from these villages. In short, long distances to markets undermines the ability of producers to sell their crops; results in high transportation costs and high transaction costs, both to buyers and sellers; and it leads to uncompetitive, monopsonistic markets.

Agricultural marketing is strongly influenced by transport services. Expensive transport services result into low farm gate prices and high consumer prices at the market. Transport cost is high in rough roads. Poor road condition existing in the villages is also the factor that hinders farmers to access the markets. These roads are seasonally impassable and this limits cars and trucks from travelling to some villages to collect food crops. For example, during rainy season, the road connecting Sonu village to main road to Bomang'ombe market is only passable on foot due to muddy condition. Thus farmers carry small volumes of produce on their heads and send them to the selling point. Common means of transport available to rural farmers are cow-pulled carts, bicycles, motorcycles, and tricycles. Infrequent transport with poor storage facilities also discourages farmers in sending their produce to markets in order to avoid losses where some crops deteriorate quickly like bananas.

Access to regional and national markets is very limited to rural farmers. These markets are located at the center of the regions or in large district capitals. The supply to these markets is reliable and consumers enjoy varieties of food produces. Supply to these markets come from rural areas. Regional markets are available both at Morogoro and Kilimanjaro regions. National market usually collect produces from all regions in the country to be available to consumers, and processors. In Tanzania, Dar es Salaam can be considered to be providing the national market. Distance, means of travel and transportation, and small volumes of produce limit access to these markets by rural farmers. Thus, these markets are mostly accessible by larger scale traders who collect food produces from rural areas.

Another factor that discourages farmers from accessing the markets is the availability of local traders and middlemen (i.e. intermediaries) who are well established and linked to larger grain traders. Local traders and middlemen are well equipped with marketing information and they collect food produces from the farmers and sell them to larger traders or even send the produces to town markers. Despite the views of other researchers who view the middlemen as exploiters, they are trusted and sometimes they even take produces from farmers on credit.

Small volumes of produce for sale also restrict small-scale farmers from accessing the markets. Majority of small-scale farmers indicated that they sell their produce when needs arise or due to lack of storage facilities. A few indicated that they sell their produce as part of their businesses. In this case farmers



prefer to sell their produce to available local traders, middlemen or at available local markets to minimize transport cost.

Difficult market access has many consequences to the economies of small-scale producers and other market participants. In short, it reduces their opportunities for generating income; it increases uncertainty and limits their choices. As a result, rural producers have limited marketing opportunities, which significantly reduces farm-gate prices and increased input costs. The incentives to participate in monetized agricultural economy are weakened, and thus small farmers concentrate on subsistence farming rather than market-oriented production systems.

5.2 Market Structure

Remote villages are often served by traditional open markets commonly known as 'gilio' which are usually held on weekly basis. These markets are dominated by individual traders who gather produces from small-scale producers to sell to larger scale traders in urban areas. Within these open markets, consumers are the local rural residents themselves and in some cases middlemen play a role of distributing produces to markets. An open market may serve small-scale producers from the surrounding and neighboring villages and thus can be reached even on footing. Open markets may even emerge in the streets and even at the junctions to the main road, as is the case of Dumila at the junction to the main road to Dodoma or Morogoro town.

The open markets are dominated by small-scale producers and consumers, and a few middlemen and local traders. These rural markets are not competitive and have limited varieties of produces. Rural producers also depend on larger scale buyers coming to the village to buy their produces. These larger buyers may be individuals, companies, and private or government institutions. Small-scale farmers may also send their produces at other markets in their districts or at the regional centers. Farmers from Kilosa and Mvomero in addition to sending their produces to the markets at their respective district centre's, they can also

send their produce to Morogoro town. Farmers from Hai can send their produces to Bomang'ombe and Moshi Town. In short, farmers can send their produce to any markets including markets in the neighboring districts and regions.

In recognizing the concern of farmers that they can sell their produces at better prices if market infrastructure is improved and is near their farms, the Tanzania government established the Kibaigwa cereal market at Dodoma, which is strategically positioned at the centre of the country. The market collects

cereals from all over the country and it has a pure international face (i.e. provides export market) where prices are determined freely by the market situation of the day. Other cereal markets are Tandale in Dar es Salaam and Himo at Kilimanjaro. These markets provide price information to the producers. For example at Kibaigwa, the market authority sends market price information to about 72 participating villages each morning by posting the price information on the noticeboard at each village.

Access to markets is very crucial to farmers as it has strong and direct impact on their income. It can be used to address farmers' concern like access to financial services, inputs and land. Thus access to markets perhaps may lead to improved price for the produce and thus to income of small-scale farmers.

5.3 Market Access Related Factors

A skilled, well organized and equipped with information, participants benefits more in the market. As rural farmers are limited to market access, they are at a major disadvantage. They have little understanding of the markets, how the markets work and the reasons for price fluctuations at the markets. These rural farmers have little information on the market conditions, prices at different markets, quantity and quality of produce required at the markets. As of this, rural farmers are not active market participants and they can be exploited by other market participants whom they have market relations.

Access to timely and real information is also vital for the participation of farmers to markets as it helps them to learn the market prices and demand for specific products and markets. Information about market conditions and produce prices at the markets can also help farmers bargain better on the prices of their produces. This can also help farmers bypass local traders and establish links with the traders and thus sell their produce direct to markets or traders. The information becomes valuable if it is location-specific, timely and accurate, dynamic, and locally available and in a language understood by all of the rural population. Thus improving communications is very important

in reducing information asymmetries.

Results from Table 3 Media of Communicating Information

		Radio		Mobile Phone		Newspapers		Television		Village meeting		in reducing
		R	R%	R	R%	R	R%	R	R%	R	R%	
Morogoro town. Farmers from Hai can send	Kilosa	71	32.90	56	25.90	13	6.00	3	1.40	0	0.00	
	Mvomero	46	21.30	46	21.30	8	3.70	9	4.20	8	3.70	
	Hai	64	29.60	62	28.70	18	8.30	22	10.20	3	1.40	
	Total R (R%)	181	83.8	164	75.9	39	18	34	15.8	11	5.1	



suggest that ownership of radio and mobile phones has increased in rural areas regardless of social barriers like gender. Results indicated that majority of small scale farmers preferred to use radio and mobile phones in accessing and distributing information. Unfortunately, these farmers own basic phones and not smart phones and thus this limits the promised access to instant messaging, the World Wide Web, streaming multimedia, and their participation in social media. Additionally with basic phones, farmers cannot use applications that share, exchange and process data while support decision-making. Results also reveal that farmers very rarely discuss marketing of their produce in village meetings. Access to newspapers and TVs is not widespread and is limited in rural areas. Results from

Table 4 also reveal that rural farmers have no access to computers and the associated technologies of the Internet. Failure to access communication media like TVs, computers and the Internet is associated with factors like the environment and absence of electricity. However, information provided by some media like TVs, newspapers and radio may not be relevant to rural farmer. These media may publish agricultural information covering regional and national markets which does not interest rural farmers as they are not customized to suit their needs. Table 5 below depicts factors that limit respondents in accessing information and media of communication. It is evident that remote villages are not connected to electrical power as compared to villages close to main roads. Though Dumila village is nearby the main road and electricity is available, few houses surveyed had electricity. Majority of respondents from Sonu and Modia in Hai are connected to electricity. Rural farmers showed their concern that communication is expensive and thus fail to afford the associated costs. In some rural areas, communication services are difficult to access or unavailable as not all mobile companies operate there. As radio and TVs broadcasts have predefined fixed time, respondents had the opinion that they missed some broadcasts due to timings.

Table 5 Factors Limiting Access to Media

Factors	Respondents	
	R	R %
Lack of electricity	121	56.0%
Road conditions (rough, distance)	75	34.7%
Lack to afford communication cost	90	41.7%
Services unavailable	53	24.5%
Unfriendly program time	67	31.0%

Lack of access to markets and agricultural information by farmers is translated to a number of disadvantages. This lack means farmers are not linked to markets and to traders and thus they know a little about the real situations in the markets. Farmers cannot know the prevailing prices of the produces at the markets. All these lead farmers to depend on the information provided by local farmers and food vendors in making selling

decision. Dependence on prices proposed by traders leads farmers to sell their produce at low prices.

5.4 Illiteracy

Illiteracy affects one's ability to access important agricultural market information (such as price updates) and fair marketing commitments. Illiteracy does not involve inability to read and write only, but also inability to interpret agricultural market information. Results from **Table 1** indicate that 23 (10.65%) respondents did not attend or complete primary education. It is difficult for illiterate respondents to account for their production and even enter into a written trading contract. In addition to limited exposure to written communication, some respondents spoke with difficulty the official languages of Swahili and English. Thus an illiterate small-scale farmer finds it difficult to communicate with traders and other market participants. In addition, an illiterate farmer may fail to travel to distant markets for selling produce. As a result of all these, illiterate farmers may limit themselves to their local traditional markets and thus sell their produce to available local traders.

6. CONCLUSION

Access to agricultural markets and information remains crucial and involves a number of sectors. To have produce send to markets, one needs a road, transport and even storage. Good roads and reliable means of transportation assure that transaction costs are minimized and thus farmers get better prices to the markets. Access to market information allows farmer to sell produce at specific time. Further, the information allows farmer to select markets at which to send produce and even sell to the identified buyers. Thus well-informed farmers, equipped with marketing information make better decision when selling their produce to ensure they get better price. The overall goal is to ensure rural farmers are not exploited by other market participants but rather they get a good and fair share of their produce.

As access to markets is a cross-cutting issue, different sectors need to be involved. To ensure remote villages are reached, roads can be constructed that are passable at all season of the year. Good roads assure many traders can reach the remote villages and purchase produce. Good roads also cars and trucks can reach in remote villages and thus assure easy means of transportation. The same, rural farmers can have choices too whom to sell their produce due to availability of many traders. Farmers can decide whether to sell their produce locally or transport to markets.

Farmers may also benefit more when they are organized in their organizations. These organized groups allow smallholder farmers to bulk produce, reduce costs through economies of scale and, perhaps most importantly, to strengthen their bargaining power with traders. Through these organized groups, farmers can organized transportation to markets and sell their produce collectively. This can help them to negotiate better and



bargain with market intermediaries, and larger and stronger traders.

In their view, respondent farmers proposed the establishment of selling points in some villages which can be easily reached and accessed. At these selling points, market participants can meet and perform their transactions. Producers from neighboring villages can send their produce at the selling points to meet traders. As these selling points are formal, government can even collect revenues and establish good infrastructure to support them.

Use of communication media like radio, mobile phones, TVs and the Internet is highly dependent on availability of electricity. Connecting remote villages to electrical power will accelerate the use of modern technologies in communications. Farmers had the view that radio programs can be customized to suit their information needs. This is only possible when you have a few villages and few markets. The possibility of establishing local radio to serve the purpose also seemed to be not economical due to large number of villages. With their mobile phones, rural farmers can make calls and receive text messages in order to receive agricultural market information. There is no explicit system that provides agricultural market information to rural farmers. To cater this, an information system can be built that provides such services to farmers. With this information system, information can be tailored to specificity. The system can collect information at different markets and make it available to farmers. With this system, farmers can get real time prices of produce at different markets and thus make selling decision. The system will also help information to be available to other market participants and it will form the platform for sharing agricultural market information.

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