

Value Chain Challenges: Experiences from Avocado Farmers and Traders in Njombe Town, Tanzania

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Abstract: This study investigates the challenges facing avocado farmers and local traders along the value chain in Njombe, Tanzania using the mixed method in which a combination of qualitative and quantitative approaches formed the basis for data collection and analysis. A total of 230 respondents formed a study unit whereby 180 were avocado farmers and 50 were avocado traders. Primary data were collected through questionnaire, interview, direct observation and focus group discussions while secondary data were collected from published and unpublished materials. Data were analyzed using the SPSS and results were presented using expressive statistics and figures. It was established that along the value chain, avocado farmers and traders experienced low prices, unreliable markets, damaging of avocados, poor transport systems, lack of market information, lack of capital and low fruit quality. Therefore, the government should help farmers in determining reliable markets. Effective efforts should be geared up to make sure that all activities along the chain are well coordinated and monitored. Also all actors should be brought together for effective communication and information sharing on avocado value chain.

Keywords: Agriculture; avocado' markets' value chain, avocado, farmers, traders, Tanzania

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Introduction

Agriculture is a pillar of economy in most of sub-Saharan Africa; majority of people depend on agriculture for their livelihoods. The major food crops grown include; maize, rice vegetables, potatoes, bananas, cassava, beans, wheat, sorghum, millet and pulses. Corn has the widest distribution being grown approximately in all ecological zones. Cash crops include tea, cotton, coffee, pyrethrum, sugar cane, sisal, horticultural crops, oil-crops, cloves, tobacco, coconut and cashew nuts (Chauvin, Mulangu & Porto, 2012). The activity provides employment and contributes an average of 30 to 60% to the gross domestic product (GDP). It has been estimated that about 250 million people in Africa are smallholder farmers who contribute about 70% of the food supply (Gollin, 2014;

Rapsomanikis, 2015). However, there is deficient information on the inter-linkages between production, agro-industry and markets. Most of smallholder farmers around the world face poor marketing linkages (Karuiru, 2018).

With global increased population, diversification in agricultural crops is essential in order to meet the food demands for the unprecedented population growth. Horticultural farming has been recognized as one of the rapid growing agricultural sub-sectors and it is a potential driver of poverty reduction among low-income smallholder households (Mkindi 2011; Barrett *et al.*, 2012). Horticultural crops refer to fruits, vegetables, ornamental and medicinal plants (Amao, 2019). Avocado is one of the horticultural crops with high economic value. Globally, the production of horticultural crops has

grown more rapidly than cereal crops in the recent years. It has been reported that between 1960 and 2000, the area under horticultural crops has even doubled (Lumpkin, Weinberger & Moore, 2005). Various reasons have been attributed to this growth including high economic return and per capita income. Also fruits have ecological advantages as they are environmentally friendly thus provide a pronounced support in fighting against drought; they can also be used as shade, firewood, food security and agro industry (Karuiru, 2018). There has been increased promotion of production and trading systems of the horticultural crops especially fruits and vegetables in most of developing countries. The International Fund for Agricultural Development (IFAD) has initiated various regional strategies for sub-Saharan Africa which focuses on enhancing the income of small holders by instigating strong fruits and vegetable marketing systems (International Fund for Agricultural Development, 2003). Tanzania is an agricultural country with important export crops like tea, coffee, tobacco, sisal and flowers, but recently, avocado has gained much attention.

In today's contemporary markets, smallholder farmers encounter substantial constraints. The commercialization and renovation of food supply chains has been reflected by the rise of supermarkets in the developing world. This situation has given new opportunities for smallholder farmers. On the other hand, commercialization marginalizes and isolates smallholder farmers from profitable markets and making them unfeasible economic units (Rapsomanikis, 2015). Most of the agricultural outputs lack the required standards for modern markets. Sales through more refined channels such as supermarkets and foreign markets require farmers' higher managerial and logistics skills as well as stable production. Improvement in agricultural sector is a necessary condition towards social-economic development (Randela, 2018). Horticultural sector is vulnerable to market deterioration. While most of horticultural products have very short shelf life, a well-defined value chain is essential towards poverty eradication among horticultural farmers and traders.

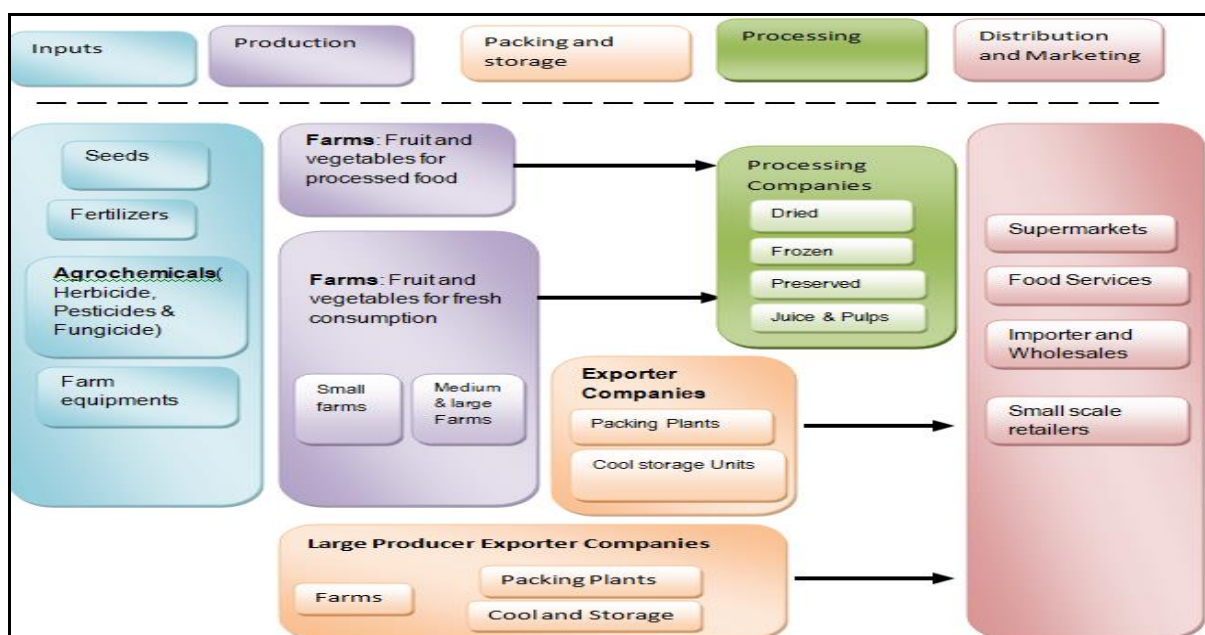


Figure 1: Global fruits value chain (Source: Modified from Fernandez-Stark *et al.*, 2011).

The main activities in the fruit value chain involve inputs, production, packing and storage, processing, distribution and marketing (Figure 1). Inputs includes seeds, fertilizers, agrochemicals and farming equipment which can be used in fruit and vegetable production. The production can either be in small scale or large scale farming. Along this chain, the retailers set and enforce the product and

process parameters that must be met by producers. This is termed as 'buyer-driven' value chain (Fernandez-Stark, Bamber & Gereffi, 2011; Gereffi, and Lee, 2012). Retailers wield a considerable control over the whole value chain and utter how the fruit is produced, harvested, transported, processed and stored. The ability of fruits producers to meet the terms of international food safety and

quality standards is thus a precondition to access global markets. Unfortunately, most of producers specifically in low developed countries are unable to meet such standards, thus, access to international markets is limited. Lead retailers' emphasis on cost competitiveness, quality, consistency and product delineation puts firms and farmers in buyer-driven value chains (Humphrey, and Schimtz, 2002). Horticultural products can be sold to the supermarkets, food services avenues, importer and wholesales as well as to small scale retailers depending on the quantity and quality of products.

In Tanzania the avocado is grown by small scale farmers who own hundreds of avocado trees around their homesteads and in distant farms. The fruit serves as food, animal feed, source of income, firewood and timber (Mkindi, 2011). The commercial production is dominated by Rungwe Avocado Company and Africado Ltd. The Main varieties grown are Hass and Fuerte (Linda, 2004). The harvest periods for avocados in Tanzania are from January to March, and May to August. The Tanzania Horticultural Association (TAHA) and the Avocado Catalogue 2020 report show that there is an increased avocado export from 1,877 tonnes in 2014 to 9,000 tonnes in 2019.

Despite the increased trend of exports, farmers have no direct link with the foreign or international markets; the fruits are exported to Kenya which then re-exports to Europe and Asia (Juma *et al.*, 2019). In Kenya, the market value chain is well organized. It has been reported that approximately 39% of total avocado annual production is exported to the foreign markets (Karuiru, 2018). Most of smallholder avocado farmers sell their produce to the local markets with low prices due to low quality. The international markets bid higher prices and demand higher quality in comparison with local markets. If the smallholder avocado farmers could manage to sell their produce to the export markets, they could raise their incomes (Warning and Key, 2002; Minten, Randrianarison & Swinnen, 2009). Accessing to international markets is hard for smallholders as they need to be linked up with exporting firms. A study done in Zanzibar by European Union (European Union, 2015) reported that most of the small holder farmers who involved in fruit and vegetable production encountered various challenges including lack of market information, lack of knowledge on the costs associated with running the farm and delay in payment for their produce on time.

Agricultural productions need a well determined value chain for profit maximization among farmers. Studies conducted in Kenya revealed that constraints hindering the development of avocados are reported to be found in all stages of the value chain. Farmers reported to be affected by lack of clean disease-free seedlings and grafted seedlings. Also, poor storage facilities and absence of jointly bargaining power had enforced individual farmers to accept inauspicious contracts. Absence of organized institution and system group marketing has made traders in a better position to dominate pricing (Karuiru, 2018). A value chain is explained as a set of simultaneous activities that work to add value to manufactured goods; it is composed of actors and activities that improve a product while connecting commodity producers to processors and markets. For the purpose of this paper, avocado value chain involves all activities from input procurement to farming, production, processing, packaging, retailing and marketing. In most of developing countries where agriculture is dominated by small scale farmers, for them, a value chain may include; information dissemination, infrastructure, agricultural planning strategies and marketing processes. Small holder farmers normally involve in informal value chains that deliver products to local middlemen and then to small local stores. Commercial farmers with large capital normally get linked with formal value chains and they can deliver the same product to more standardized commercial wholesalers, supermarkets or to the export markets (Karuiru, 2018).

Fruits value chain in Tanzania faces various challenges from farming, processing, packaging to marketing (REPOA, 2018). Several constraints limit famers from involvement in international markets including; limited access to market information, deficient credits, inflexible market requirements, lack of structured marketing and transportation infrastructure (Muriithi and Mariara, 2020). The application of modern farming strategies could increase gains from the high-value markets and it could also increase smallholders' income (Njuki, Kaaria, Chamunorwa & Chiuri, 2011; Gramzow, Batt, Afari-Sefa, Petrick & Roothaert, 2018). Previous studies on avocado have focused on fruit advantages, means of production, postharvest handling and quality, mapping suitable areas for growing improved avocado cultivars and avocado germplasm. However, very little is known on avocado production and marketing processes in Tanzania. Thus, this study aimed at investigating the

challenges facing avocado farmers and traders along the value chain. The study was guided by the following research questions:

1. What are the value chain challenges experienced by avocado farmers in Njombe town council?
2. What are the determinants of avocado market prices by farmers in Njombe town council?
3. What are the value chain challenges experienced by avocado local traders in Njombe town council?
4. What are the determinants of market prices by avocado traders in Njombe town council?

Methodology

The Study Area

The study was conducted in Njombe town, Tanzania. This area was selected because it has large number of avocado farmers and traders. The production of avocado in the study area is highly supported by the Njombe Council authorities (Mwakalinga, 2014).

Approaches and Design

The study employed the mixed approach in which a combination of qualitative and quantitative aspects

formed the basis for data collection and analysis. These approaches were essential to ensure for triangulation. The quantitative data were collected through questionnaires from the households engaged in avocado farming and trading activities. Qualitative data were collected through observation, interviews and focus group discussion in order to obtain an insight into the challenges facing avocado farmers and local traders. The study used a descriptive research design.

Population and Sampling

The study area had 13 wards from which two were selected namely Kifanya and Ramadhani (Figure 2). Households involving in avocado farming formed the study unit; at least (10%) of the households were manageable and were representative of the population. Therefore, a total of 180 avocado farmers were selected: 103 from Ramadhani and 77 from Kifanya. Also, 50 avocado local traders from Njombe main market (*Soko kuu*) were selected so as to get their imminent on challenges of avocado trading activities.

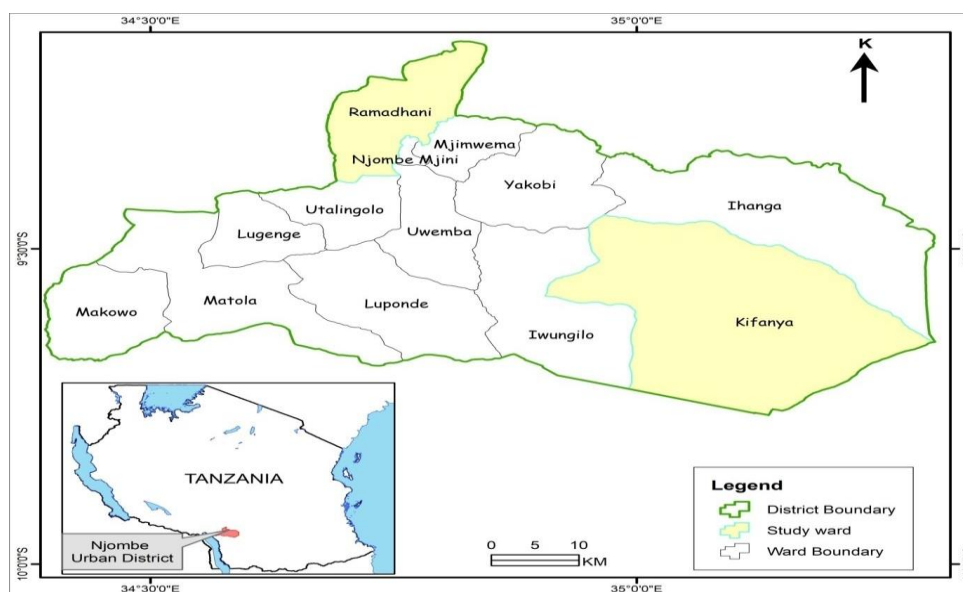


Figure 2: Location of the study area

Data Collection Methods

Primary data were collected through questionnaires, interviews, observation and focus group discussions with the avocado farmers and local traders. Secondary data were collected from the government reports, census reports, journal articles as well as library and web-based materials on the research topic.

Findings and Discussion

The presentation of results and discussions were guided by four research questions.

Demographic Characteristics of Avocado Farmers and Local Traders

Avocado production was mainly dominated by males who composed (69%) in the study area (Table 1). The nature and type of crop produced determine

the gender involvement. For instance, in urban areas, most of vegetable producers are women as informed by findings in a study in Dar es Salaam by Malekela and Nyomora (2018). However, majority of the avocado local traders were females who accounted for 76%. The observed high proportion of females engaging in avocado local trade is in harmony with Juma *et al.*, (2019) who reported females to constitute 72% of avocado local traders in Southern Tanzania.

Avocado production was done by farmers with different levels of education, including primary (57%), secondary (21%) and tertiary (14%). Majority of farmers (41%) were aged between 41 and 55 years and about (22%) were aged between 25 and 40 years. Only (3%) were aged above 70 years. Majority of the avocado traders (64%) were aged between 25-40 years and about (22%) were aged between 18-24 years as shown in Table 1.

Table 1: Demographic characteristics of avocado farmers and local traders

Variables	Avocado Farmers N=180		Avocado local traders N=50	
(a) Gender of the respondents	Frequency	Percentage	Frequency	Percentage
(i) Female	56	31	38	76
(ii) Male	101	69	12	24
(b) Education level of the respondents				
(i) No formal education	14	8	1	2
(ii) Primary education	102	57	13	26
(iii) Secondary Education	39	21	28	56
(iv) Tertiary education	25	14	8	16
(c) Age of the respondents				
(i) Between 18-24 years	25	14	11	22
(ii) Between 25-40 years	40	22	32	64
(iii) Between 41-55 years	74	41	6	12
(iv) Between 56-70 years	36	20	1	2
(v) Above 70 years	5	3	0	0

Table 2: Value chain challenges experienced by avocado farmers

Variable	Response	Frequency	Percentage
(a) Market challenges facing avocado farmers	Low prices	74	22.1
	Lack of market information	55	16.3
	Lack of transport	59	17.6
	Damages when ripening	70	21
	Unreliable market	77	23
(b) Farmers sources of market information	Retailers	51	28.3
	Middlemen	112	62.5
	Local markets	17	9.4

Research question 1: What are the value chain challenges experienced by avocado famers in Njombe town council?

Avocado farmers in the study area reported to face various challenges with regard to avocado marketing including; unreliable markets, low prices, lack of market information, poor transport systems and fruit damages when ripening (Table 2). The table indicates that (23%) of respondents mentioned to have unreliable markets for their

fruits. Majority of the avocado farmers in Tanzania find the avocado business dissatisfying due to lack of reliable markets while the avocado traders find it satisfying. Avocado farmers have limited access to external markets and thus end up selling to the retailers and middlemen (Juma *et al.*, 2019). Similar observations were reported by Shumeta (2010) in Ethiopia who found that avocado farmers experienced poor market condition as they received low prices. Furthermore, 17.6% mentioned poor transport systems as one of the challenges that limit

them to sell avocados to the markets in far-off areas.

Also, (16.3%) reported to have inadequate market information. As indicated in the table, about (62.5%) reported to obtain market information from the middlemen who are always after profit maximization and thus affecting farmer's income in the study area. Studies conducted by Omolo *et al.*, (2011) in Kenya revealed that avocado farmers received market information from the middlemen and retailers. This practice limits the farmers from maximizing profit and thus lowering the production processes.

Research question 2: What are the determinants of avocado market prices by farmers in Njombe town council?

Farmers reported to sell their fruits at low prices. Some market agents (middlemen) used to buy between Tshs 1000 and 1500 per kilogram. Other market agents used to buy avocados per trays at the price between Tshs 15000 and 25000 depending on the season. Low prices were associated with the size and quality of the fruits. Low prices were reported in comparison with the actual selling prices to the end consumers from that of the farm gate.

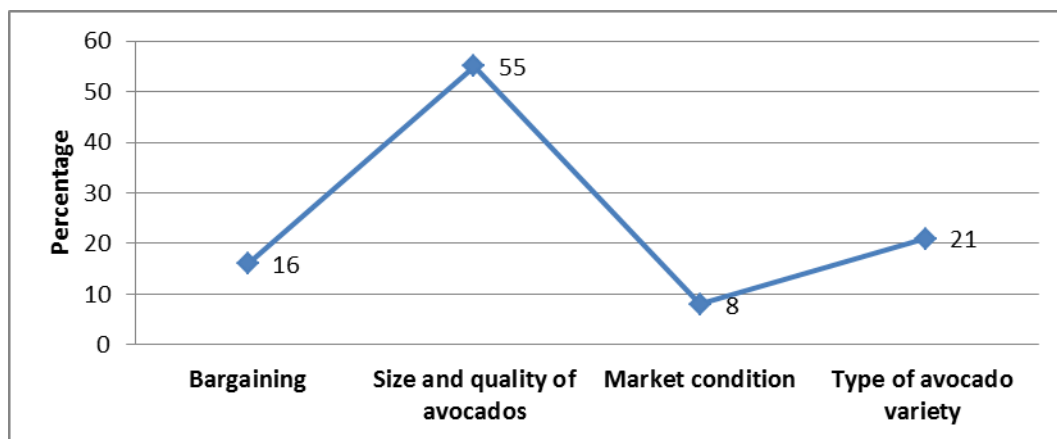


Figure 3: Determinants of market prices by farmers

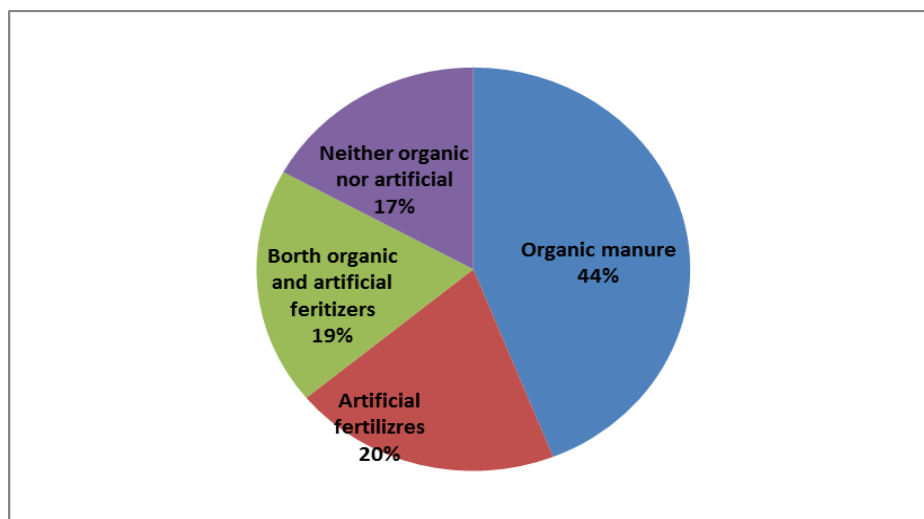


Figure 4: Application of fertilizers by the farmers

Several determinants of avocado prices were reported including; size and quality of avocado (55%), type of avocado (21%), bargaining (16%) as well as market condition (8%) as Figure 3 indicates.

Studies by Omolo *et al.*, (2011) revealed that, the size and quality of fruits determined their prices.

The size and quality of avocado was affected by the type of fertilizer applied as seen in figure 4. Majority of the farmers (44%) used organic manure in

planting, which resulted into poor fruits. About (17%) of the farmers did not use any kind of fertilizers despite of its benefits towards tree growth. If farmers could use scientific methods of avocado production, the fruits would be of large sizes and good quality leading to higher prices.

Moreover, the type of avocado grown in the study area influenced its prices; most of the traders' preferred Hass variety for external markets, thus this variety had higher prices. It was also reported that traditional varieties were not preferred by traders, thus they were consumed at farmers' households. Hass variety was widely selected for export purposes. Hass variety is characterized by medium spreading tree, bearing short-pear shaped fruits that range from 200 to 300 grams in weight; it has a green fruit that turns dark on ripening. This variety has many advantages than other types in terms of yield, good flavor and longer shelf life (Mwakalinga, 2014).

Research question 3: What are the value chain challenges experienced by avocado local traders in Njombe town council?

As seen in figure 5, Avocado traders cited various challenges including fruit damage (40%), low capital (24%), lack of transportation systems (21%) and low fruit quality (15%). Farmers used to sell avocados

when they are yet ripen, thus during ripening most of the fruits get rotten and thus affecting their business. Avocado is considered to be a climacteric fruit because it matures on the tree, but ripens off the tree. Throughout the path of ripening, the fruit experience an increase in respiration and ethylene production. Avocados are perishable thus their shelf life is very short especially to the local cultivar which can take between 5 and 7 days after ripening before trailing its quality and getting spoiled. One avocado trader from Njombe main market (*Soko Kuu Njombe*) had this to say:

"I normally buy 2 trays (40kg) per week, out of this quantity; I can sell 1.5 trays (30kgs). The remaining gets spoilage." These results are in line with those of Juma et al., (2019) who reported fruit damage as one the challenges facing avocado traders in Southern highlands of Tanzania.

Research question 4: What are the determinants of market prices by avocado traders in Njombe town council?

In the study area, traders applied several methods in determining the market prices. Majority of the traders (38%) focused on the size and quality of fruits and 30% reported to focus on profit maximization when setting the selling prices of avocados to the consumers (Table 3).

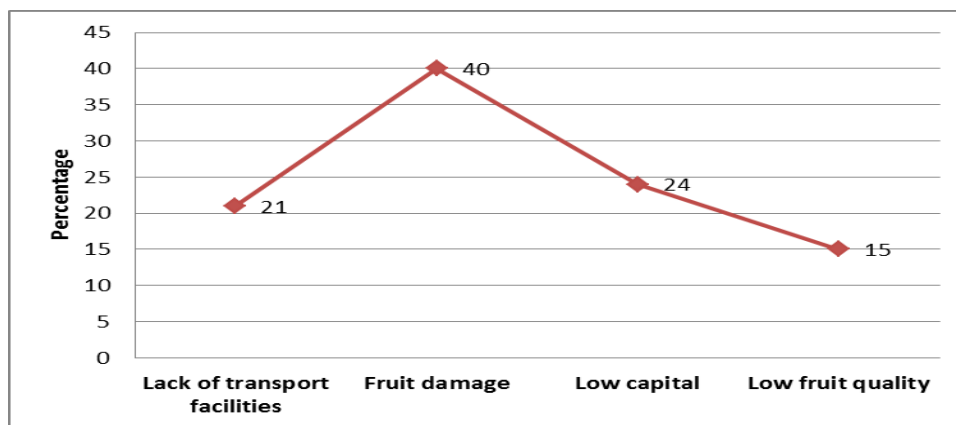


Figure 5: Value chain challenges experiences by avocado traders

Some of the retailers focused on bargaining, market forces and type of the customers. During the market survey, it was observed that most of traders sold improved varieties of avocado fruits which they contended to have better prices. Most of the customers did not prefer the traditional varieties thus traders did not purchase such categories from the farmers or market agents. Similar observation was reported by Omolo et al., (2011) who held that avocado retailers in Kenya were after profit

maximization thus different market strategies were employed to fulfill their goals regardless of the famers' situation. In most of developing countries, famers generate little income from their produce than the traders. In this case, effective interventions need to be taken so as to empower the farmers with whom their farming efforts are deprived by the traders.

Traders also reported the sources of avocado fruits they sold. Majority of them (58%) admitted to leap fruits from the market agents (middlemen) and 34% reported to source avocados direct from the farmers (Table 3). Studies by (Juma *et al.*, 2019) reported that avocado traders generated much

profit than the farmers in avocado fruit business. This has been the case as most farmers are not well informed on market prices; this gives room for the traders to buy at low prices.

Table 3: Avocado market prices determination by traders

Variable	Response	Frequency	Percentage
Traders sources of avocado	Direct form the farmers	17	34
	Middlemen	29	58
	From my own farm	4	8
Methods used to determine market prices by traders	Market forces	4	8
	Bargaining	9	18
	Size and quality of fruit	19	38
	Type of the customer	3	6
	Profit margin expected	15	30

Conclusions and Recommendations

Avocado farmers encountered unreliable markets, fruit damages, lack of market information, low prices and poor transport systems. There were various determinants of market prices including bargaining, size and quality of avocados, market condition and the type of avocado. On the other side, avocado traders faced such challenges as lack of capital, low fruit quality, lack of transport facilities and fruit damages. Avocado traders used various determinants in setting prices including; market forces, bargaining, size and quality of fruit, type of the customer and profit margin expected.

The study recommends that the government should help farmers in determining reliable markets. Secondly, operative efforts should be primed to make sure that all farmers' activities along the chain are well coordinated and monitored. All actors should be brought together for effective communication and information sharing on avocado value chain. Finally, building capacity on value addition is essential to both traders and farmers so as to minimize avocado postharvest losses.

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