

Smallholder Farmers' Access and Use of Local and Global Markets on Avocado Commercialisation for Livelihood Enhancement in Mufindi District, Tanzania

*Henry George Mung'ong'o**

Abstract

This paper examines the avocado market categories, access to, and utilisation of, commercialised local and international markets and the contribution of avocado commercialisation to livelihood enhancement among smallholder farmers in Mufindi District, Tanzania. Guided by the value-chain theory and the sustainable livelihoods framework, the paper employed a mixed-methods approach. Simple random sampling was used to select a sample of 161 smallholder farmers, and purposive sampling was used to select key informants. The data were gathered using structured questionnaires and interviews. The collected data were analysed using descriptive statistics and content analysis. The findings revealed that the majority (54.7%), of the respondents marketed avocados individually, while 40.4% marketed their produce exclusively in local markets. This suggests that local markets continue to be the primary marketing channel for most smallholder producers. Smallholder farmers' access to, and utilisation of, global avocado markets were found to be moderate (mean = 3.56), mainly due to restricted compliance with global market standards, price volatility, and weak cooperative governance. However, despite some constraints, the commercialisation of avocado recorded a relatively high livelihood improvement score (mean = 3.72). This implies improvements in household income, food security, and employment chances. The paper concludes that expanding access to markets, strengthening institutional support, and improving agribusiness services are essential to promoting the commercialisation of avocado and sustainable rural livelihoods. The paper recommends strengthening avocado market information systems by leveraging reliable digital platforms and comprehensive market databases that provide smallholder farmers with real-time data on prices, market demand, quality standards, and export opportunities.

Keywords: *avocado commercialisation, market access, smallholder farmers, livelihoods, value-chain*

1. Introduction

Avocado (*Persea americana*) is a nutritious, healthy fruit that originated in Central and South Mexico (Chen et al., 2008), and its farming is gaining global importance due to increasing demand driven by its nutritional value and

* Department of Governance, Peace and Security Studies, Institute of Accountancy Arusha: mungongo82@gmail.com. ORCID: <https://orcid.org/0009-00006-4318-4729>

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

versatility (Sommaruga & Eldridge, 2024). Despite the increase in demand for avocados from local to global markets, empirical data show that there is a shortage in supply that is hindered by unfriendly market conditions. The commercialisation of avocado farming could improve local community livelihoods through better food security, income, and poverty reduction (Mujuka et al., 2023). The global consumption of avocados has surged, particularly in Europe and Asia (Premack et al., 2019), making the fruit significant in international commerce, enhancing smallholder farmers' livelihoods, and promoting rural economic development particularly in major producing countries such as Mexico, Peru, and Chile (Sommaruga & Eldridge, 2024). In recent years, there has been a notable rise in the consumption of avocado products across various regions, especially in Europe and Asia (Holy, 2019; Hancock, 2019; Premack, 2017). Also, avocados have become a key fruit in international trade (Radha & Mathew, 2007). The rise in avocado consumption can largely be attributed to a growing awareness of the benefits of healthy eating, elevated popularity of avocados on social media, and an increased availability of convenient and ready-to-eat avocados (Hancock, 2019; Shahbandeh, 2018).

The avocado fruit industry provides livelihoods for millions, promotes economic diversification, and significantly contributes to both domestic nutrition and export earnings. Avocados are considered 'green gold' by Vijayasree et al. (2024) because of their significant economic impact and growing demand worldwide. For example, the global avocado production in 2017 reached 5.9m tons, with Mexico accounting for 34% (2.01m tons). Together, the Dominican Republic, Peru, Indonesia, and Colombia accounted for 30% of the global production. Eighty percent of Mexico's avocado production comes from the Mexican state of Michoacán, which leads the world in avocado production. Because the Hass cultivar has a longer shelf life and is in high global demand, most Mexican producers grow it. However, despite the growth in global avocado trade, smallholder farmers still face numerous challenges in accessing international markets due to their inability to comply with strict international standards, such as Global GAP certification, which require technical expertise, modern infrastructure, and substantial financial investment (Meemken, 2020). On the other hand, certified farmers have been able to obtain price premiums of 20–30%. Hence, the high costs of certification, documentation requirements, and monitoring processes: all these have excluded many farmers in developing economies from participating in the lucrative markets of avocado.

African countries are emerging as significant players in the global avocado market, leveraging their favourable climates and fertile soils to produce high-quality avocados. According to preliminary results from the FAO Tropical Fruits, African countries exported about 430,432 tonnes of avocados to international markets in 2025. This volume increased by 16.67% from 368,845 tonnes recorded a year earlier. Kenya, South Africa, and Morocco together

accounted for more than 75% of Africa's annual avocado shipments (FAO, 2026). However, farmers in Sub-Saharan Africa (SSA) face similar hurdles in complying with, and integrating into global value-chains. For instance, Amare et al. (2019) found that farmers who successfully accessed export markets in Kenya were those with larger landholdings, members of organised farmer cooperatives, and beneficiaries of specialised training programs on good agricultural practices. These farmers commonly cultivated the Hass avocado variety, which commanded higher global demand and best prices, signifying the importance of varietal selection and collective marketing in simplifying export participation (ibid.). The process of shipping avocados to Europe has been refined over the years, with strict quality controls and efficient logistics ensuring that avocados from Kenya meet international standards. In addition, limited access to information, inadequate farmer organisation, and high transaction costs have continued to restrict market inclusivity for many smallholder producers in the country.

Avocado production in Tanzania has emerged as a promising contributing sector to agricultural exports. Despite its rapid growth and increasing annual export values, the sector remains underutilised in global avocado markets due to low sectoral commercialisation. Tanzania is ranked the fourth largest avocado producer in Africa, behind South Africa, Morocco, and Kenya; and the 19th country in the world (<https://www.tanzaniainvest.com/avocado>). The crop is dominated by smallholder farmers who account for 90% of total production, with the remaining 10% coming from commercial farmers (Thomas et al., 2020). The crop is grown in different agro-ecologies of Tanzania, mainly in the Southern Highlands, covering Mbeya, Songwe, Iringa, and Njombe regions; the Northern Zone in Moshi and Arusha regions; and in the Eastern Zone of Morogoro region (Juma et al., 2019). The Hass avocado, one of the improved high-yield varieties of avocado that mature and produce fruit within three years, is followed by Fuerte (or Puebla) and Pinkerton, which are also improved high-yield varieties found in Tanzania (<https://www.tanzaniainvest.com/avocado>). Tanzania's avocado exports increased from 17,711.49 tons (valued at US\$51m in 2022/2023) to 26,826.30 tons (valued at US\$77.3m in the 2023/2024 season), and it is estimated to reach 31,950 tons. Long-term projections suggest production will reach 930,620 tons by 2030/2031, and 2.29m tons by 2035/2036, with potential export revenues of US\$714m and US\$2.8 billion, respectively. The key destinations are expected to be Europe (40%), India (30%), and the Middle East (19%).

The avocado export industry in Tanzania holds substantial potential to contribute to the national economy (Kingu & Kinyondo, 2024). Vijayasree et al. (2024) describe avocado as 'green gold' due to its considerable economic impact and the rising global demand through export revenues, a description that is contextually relevant to Tanzania. Smallholder farmers, often managing plots

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

of less than 2ha, contribute to much of the production (Hoddle & Mound, 2020). However, Tanzania's avocado export values in 2023 approximated a mere US\$37m, in contrast to a global market value of US\$7.278bn (ITC, 2024).

As with the case of similar SSA countries, Tanzania's avocado industry has not managed to fully exploit the expansion of the global avocado market that is driven by rising global demand, as health-conscious consumers increasingly value avocados for their versatility in culinary, cosmetic, and health applications (Muñoz et al., 2023; Huang, 2023). This is due to several obstacles, including inadequate cold chain facilities, limited infrastructure, and the requirement to conform to international quality standards (Juma et al., 2019; Malekela, 2022). Hence, addressing these problems is crucial to unlock the country's full potential as a global player in the avocado industry (Steffens et al., 2020). Due to limited access to global markets, smallholder avocado commercialisation in Tanzania primarily reaches local and regional markets. However, even at these levels they still face challenges in fulfilling even fundamental quality standards, such as suitable fruit size, ripeness, and freshness (Boniphace et al., 2023). Accessing foreign markets, where strict phytosanitary and packaging regulations frequently surpass small-scale farmers' abilities to comply, further exacerbates these losses, hence limiting their market access (World Bank, 2022). Moreover, the avocados produced are characterised by limited value addition: most are exported raw with minimal processing into high-value products such as oil or guacamole (Malekela, 2022; Boniphace et al., 2023).

The global market presents important opportunities for the avocado sector in Tanzania (Hoddle & Mound, 2020). This viewpoint is strengthened by the International Trade Centre (ITC, 2024), which shows that the increasing popularity of avocado oil and other processed avocado products—particularly in Europe, the Middle East, and Asia—creates new avenues for export growth. These markets not only demand larger quantities but also value-added products, offering producers in Tanzania the opportunity to diversify their produce and tap into premium price segments (Reuben & Meliyo, 2022). The potential for increased market access that Tanzania has regionally is associated with its membership in trade blocs like the AfCFTA and the EAC. These agreements increase market connectivity, lower trade barriers, and expand regional avocado trading opportunities (UNECA, 2022). By utilising the advantages of regional trade, this integration enables Tanzanian producers to forge a more robust presence in nearby regional markets (Amare et al., 2019).

Avocado production in Mufindi District, Tanzania, has been increasingly known for its potential to improve the livelihoods of smallholder farmers. Avocado farming has expanded with support from an agronomic organisation, the Sin Fronteras Foundation (ASFF) and USAID, through the dissemination of information in local and international markets. However, despite the progress

Henry George Mung'ong'o

made in avocado production, smallholder farmers in Mufindi District still have limited access to relevant and adequate information on local and international markets, which limits the growth of the avocado sector in the area.

This study, thus, seeks to answer the following question: How do smallholder farmers access and use local and global commercialised market opportunities; and how does commercialised avocado agriculture enhance farmers' livelihoods in rural settings? By studying Tanzania's avocado industry as a new participant in international markets, and highlighting its contribution to export diversification beyond conventional commodities like coffee and tea, this study adds to the body of knowledge on agricultural commerce. In analysing Tanzania's position, relative to other major exporters—including Kenya, Peru, Mexico, and South Africa—we can gain important insights into production cycles, competitive global commerce, and strategic market positioning. Also, the study highlights the significance of value-added processing, such as avocado oil production, in enhancing export revenues and improving trade competitiveness through supply chain optimisation and infrastructure investment. Apart from its academic contributions and the trade literature, the study informs policy adjustment by showing key strategies for improving avocado export competitiveness in Tanzania. To ensure that avocados from Tanzania effectively fulfil worldwide market requirements, the study emphasises the critical need for infrastructure development particularly in cold chain logistics, transportation networks, and quality control systems.

2. Theoretical Framework Underpinning the Study

The value-chain theory by Porter (1985) is a strategic framework for examining a firm's internal activities to identify sources of competitive advantage that focuses on maximising value creation, while also minimising costs. It divides organisational functions into primary activities (logistics, operations, sales) and support activities (infrastructure, HR, technology) to improve product efficiency and profitability. A value-chain analysis examines how each activity—ranging from inbound logistics and operations, to marketing, sales, and after-sales service—contributes to the general cost structure and customer value. The framework also includes supportive functions such as infrastructure, human resource management, technological development, and procurement that enable primary activities to operate effectively.

The theory hypothesises the series of interconnected activities undertaken by a firm or industry to deliver a product or service from its initial production stage to final consumption, with every stage adding value. The theory was applied in the context of agriculture to examine the full range of activities involved in delivering crops, such as avocados, to the market (including input supply, production, processing, marketing, and distribution); while identifying chances to improve efficiency, competitiveness, and inclusiveness (Kaplinsky & Morris, 2001). The theory also helped highlight the roles of different actors (such as farmers, traders,

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

and exporters) as well as governance instruments (such as contracts and cooperatives) that govern how value is created and distributed along the chain. For smallholder farmers, the integration into agricultural value-chains was recognized as a pathway to improved market access and higher incomes despite barriers such as high compliance costs, limited bargaining power, and information asymmetries that often constrain their involvement (Gereffi et al., 2005).

In this study, the value-chain theory guided the investigation into how smallholder avocado farmers in Mufindi District accessed local and global markets, complied with quality standards, and navigated structural limitations, including the dominance of middlemen and poor infrastructure. The fruit value-chain comprises all activities from production to consumption, including input supply, cultivation, harvesting, packing, processing, and distribution. It is often a buyer-driven chain in which retailers and processors set standards; thereby creating chances for value-addition through logistics, quality control, and processing, while often leaving producers with lower margins. Porter's value-chain theory remains a fundamental tool for understanding the 'value-added' process from raw materials to final customer services, enabling firms to optimise their internal operations. As a result, the value-chain analysis is widely used in strategic management, supply-chain management, and development economics to understand competitiveness, efficiency, and value-creation across organisations and regions. Products pass through a chain of activities, and at each activity the product gains some value.

3. Research Context and Methods

3.1 Description of the Study Area

This study was conducted in seven villages in Mufindi District. These villages are Kisasa, Ibatu, and Nzivi in Igowole ward, and Ikongosi, Nundwe, and Ihalimba in Ihalimba ward (Figure 1). Mufindi District was purposefully selected as the study area because of the presence of many smallholder farmers (85% of the total residents) who rely on agriculture, including avocado production; and it is also among the big producers and exporters of avocados in both local and global markets; with big market companies like Kibidula Company (NBS, 2024).

Moreover, the area was selected due to its significant role in enhancing the livelihoods of local communities. Mufindi District, located in Iringa Southern Highlands, provides the ideal conditions for avocado cultivation due to its high altitude (1,700–2,200m above sea level), and reliable annual rainfall ranging from 1,000 to 1,600mm (Mlenga et al., 2020). Mufindi is one of the leading contributors to Tanzania's expanding avocado industry. According to the Tanzania Horticultural Association (TAHA, 2023), avocado exports from the country increased substantially between 2014 and 2023, driven largely by growing demand for the Hass variety in Middle Eastern and European markets. This increase in demand encouraged many smallholder farmers in the district to adopt avocado farming as an important source of household income and livelihood improvement.

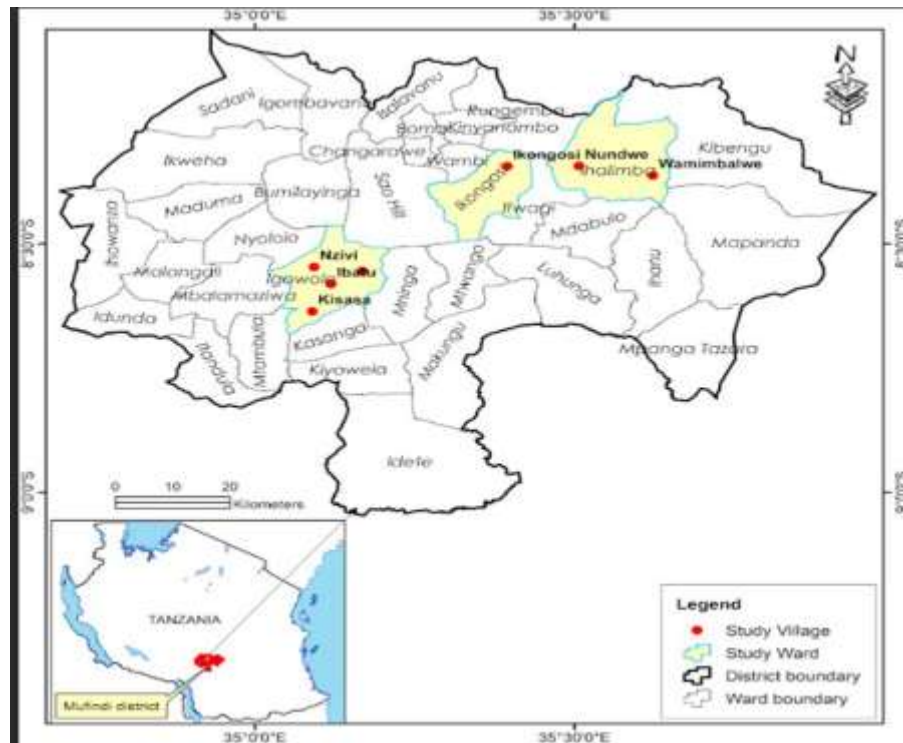


Figure 1: Location of the Study Area

Source: Cartographic Unit, UDSM

3.2 Research Design and Approach

This study used a mixed-methods research design that was deemed suitable as it combines both quantitative and qualitative approaches, thereby providing a comprehensive understanding of the issue. The quantitative aspect enables the measurement of market levels and livelihoods across a larger sample. At the same time, the qualitative approach provided deeper insights into farmers' personal experiences and perceptions of avocado market access and use. By using mixed methods, the study was able to address both the breadth and depth of the topic, leading to more informed conclusions and recommendations. Thus, the quantitative approach was employed to collect and analyse the numerical data, and the qualitative approach was used to collect and analyse the textual data.

3.3 Study Population, Sample and Sampling Procedures

Avocado farmers, avocado traders, ward agricultural extension officers, and one official from the district Agricultural and Marketing Cooperative Society (AMCOS) formed the population of this study. The inclusion of these groups ensured that the study captured an inclusive range of perspectives related to avocado commercialisation; including production, marketing, and policy

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

coordination. Specifically, 270 registered avocado farmers were found in the selected wards of Mufindi District. A total of 88 farmers were registered: 65 from Nundwe Village and 23 from Wamimbalwe Village. In Ikongosi Ward, 52 farmers were identified, particularly from Ikongosi Juu Village; while 51 farmers were identified in Igowole Ward, distributed across Nzivi (29) and Kisasa (22) villages. For the commercial segment, 10 avocado traders were purposively selected from the main district market where avocado trade activities were concentrated. In addition, the study included three ward agricultural extension officers representing the selected wards, and one official from the district AMCOS. The involvement of these informants ensured that the study incorporated professional insights into production practices, market integration, and the socio-economic implications of avocado commercialisation for smallholder farmers in Mufindi District. Therefore, the total number of smallholder farmers from both villages was 270, and Yamane's formula (1967) was used to determine the sample size for this study. A 95% confidence level was used to calculate the sample size, as indicated in equation (i):

$$n = \frac{N}{1 + N(e^2)} \dots \dots \dots (i)$$

Where n = sample size, N = total number of households (270), and e allowable error. Thus:

$$n = \frac{270}{1 + 270 (0.05^2)} \dots \dots \dots (ii)$$

$$n = \frac{270}{1.675} \approx 161.19 \dots \dots \dots (iii)$$

Hence, the sample size from the three selected wards was 161 farmers, distributed as shown in Table 1.

Table 1: Distributions of Sample Size in the Study Area

Ward Name	Village Name	Population	Sample
Ihalimba	Nundwe	65	39
Ihalimba	Wamimbalwe	23	14
Ikongosi	Ikongosi Juu	52	31
Igowole	Igowole	42	25
Igowole	Ibatu	37	22
Igowole	Nzivi	29	17
Igowole	Kisasa	22	13
Sub-total			161
Ward Extension officers			3
Major District avocado traders			5
AMCOS Officials			1
Total	—	270	170

Source: Field Data (2025)

Simple random sampling was used to select 161 respondents from a total population of 270 avocado farmers across the three selected wards for quantitative data collection. The village executive officers provided a list of farmers' names, which the researcher used to select the study respondents. The names were written on pieces of paper that were folded and placed in a box, from which the researcher selected one at a time to determine the study respondents, until the required sample size of 161 was reached. The names from each village were treated separately to ensure proportional samples (Table 1). The selection of ward agricultural extension officers, avocado traders, and AMCOS officials in Mufindi District was conducted using purposive sampling to generate qualitative data.

3.4 Methods of Data Collection

The collection of data employed multiple data-gathering methods to facilitate triangulation and enhance the validity of the results, including household surveys and in-depth interviews. A household survey was conducted among smallholder farmers who were selected to participate in the data collection using questionnaires. These questionnaires had both closed- and open-ended questions. The process lasted 20–35 minutes per questionnaire. The questionnaires used both nominal and ordinal (Likert scale) scales ranging from 'Strongly Disagree' (1) to 'Strongly Agree' (5). To measure the level of satisfaction, a Likert scale was used: 1.00–1.80 = 'Strongly Disagree'; 1.81–2.60 = 'Disagree'; 2.61–3.40 = 'Neutral'; 3.41–4.20 = 'Agree'; and 4.21–5.00 = 'Strongly Agree'. Demographic details included information on market access, income variations, livelihood outcomes, and the avocado commercialisation process.

Moreover, in-depth interviews with key informants were conducted to collect qualitative data. The key informants comprised district and ward agricultural and extension officers, village executive officers, avocado traders, and AMCOS officials from selected wards in Mufindi District, as well as village executive officers from each village. These informants were deliberately selected for their position, knowledge, and experience; which enabled them to provide detailed information on market access, compliance with quality standards, and institutional support. In addition, the researcher collected qualitative data through gender-sensitive focus group discussions (FGDs). Each village hosted two FGDs consisting of 6 to 8 members, including a mixture of avocado farmers from different villages within the selected area. The discussions were held in Swahili, and the conversations were later translated into English. Finally, field observation was used to capture what smallholder farmers were doing in their area. The observations primarily focused on avocado access and livelihoods enhancement. This information helped to confirm and support findings gathered through other data-collection methods. Furthermore, document review was also used to collect secondary data.

3.5 Data Analysis and Presentation

The qualitative and quantitative data were analysed distinctly. On the one hand, the quantitative data analysis was performed using descriptive statistics to characterise the collected data, supported by the Likert-scale data. The outputs are presented in tables and figures that provides a clear understanding of patterns and relationships in avocado commercialisation among smallholder farmers. On the other hand, content analysis was used to analyse the qualitative data. This began by collecting data through in-depth interviews and observation, ensuring a comprehensive understanding of farmers' perspectives. The data were then transcribed verbatim and systematically reviewed to identify recurring patterns and concepts. This methodical approach facilitated a nuanced understanding of the farmers' access to avocado markets and their livelihoods. Finally, direct quotes and narrative summaries present the qualitative data.

4. Results and Discussion

4.1 Demographic Characteristics of Respondents

To collect information on demographic characteristics, the respondents were asked to report their sociodemographic details. Specifically, they were asked to indicate their gender, age-group, marital status, farming experience, type of farmer, main market type, and education level. The results, as shown in Table 2, indicate that a significant percentage (61.5%) of the study respondents were male, while the minority (38.5%) were female. This is typical of most African cultural settings where households are led by men, who are the primary decision-makers in the family. Furthermore, the findings indicate that over three-quarters (82%) of the respondents were aged between 25 and 50, while those aged 50 and above accounted for 18%. Also, the findings indicated that many smallholder farmers were young adults and middle-aged people who mostly participated in agricultural production. This is a positive development because the livelihoods of the surveyed communities are heavily reliant on agricultural production. Education-wise, the results show that about 49.1% of the respondents involved in the study had primary education. Those with no formal education accounted for 11.2%, while those with secondary education or higher accounted for 24.2%. This has implications for limitations in accessing and using global markets due to non-compliance with international standards.

4.2 Access and Use of Local and Global Markets on Avocado Commercialisation

4.2.1 Categorization of Avocado Farmers

The study findings show that 88 respondents (54.7%) were individual avocado farmers, 46 (28.6%) were avocado cooperative members, 20 (12.4%) were export-linked farmers, and 7 (4.3%) belonged to other forms of contracted groups (Table 2). Therefore, with 54.7% being individual farmers, this indicates that avocado cultivation in Mufindi District is still largely done on a small-scale basis, with restricted collective marketing or institutional coordination.

Table 2: Respondents' Demographic Characteristics

Variable	Category	Respondents (N)	Percentage (%)
Gender	Male	99	61.5
	Female	62	38.5
Age Group	0–25 years	19	11.8
	25–34 years	47	29.2
	35–44 years	53	32.9
	45–54 years	28	17.4
	55 and above	14	8.7
Education Level	No formal education	18	11.2
	Primary education	79	49.1
	Secondary education	39	24.2
	Certificate/Diploma	17	10.6
	Bachelor's degree and above	8	5.0
Farming Experience (Years)	Less than 1 year	9	5.6
	1–5 years	43	26.7
	6–10 years	56	34.8
	More than 10 years	53	32.9
Type of Farmer	Individual farmer	88	54.7
	Cooperative member	46	28.6
	Export-linked farmer	20	12.4
	Other (e.g., contracted group)	7	4.3
Main Market Type	Local	65	40.4
	Regional	53	32.9
	International	25	15.5
	All the above	18	11.2
Total		161	100

Source: Field Data, 2025

However, the availability of cooperative and export-linked farmers reflects an emerging trend toward organised production and access to high-value markets. Cooperative membership improves bargaining power, facilitates access to inputs, and provides linkages to exporters and processors. Export-linked smallholder farmers represent a progressive segment capable of meeting international market conditions, suggesting a gradual integration of Mufindi farmers into the global avocado value-chains. This distribution underscores the importance of promoting farmer organisations to improve market participation and income diversification.

4.2.2 Access to Main Markets Category

The findings presented in Table 2 show that 65 respondents (40.4%) sold their avocados in local markets, 53 (32.9%) in regional markets, 25 (15.5%) in international markets, and 18 (11.2%) across all market types. This distribution indicates that local and regional markets are the primary outlets

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

for most smallholder farmers due to easier access, lower transaction costs, and fewer quality restrictions. However, an increasing number of farmers are beginning to take part in export markets through cooperative societies and contract farming arrangements. Farmers involved in international trade generally reported higher incomes; but faced challenges such as certification costs, stringent standards, and limited technical know-how. The findings highlight that while the commercialisation of avocado in Mufindi District is expanding, most farmers still operate within domestic markets, with gradual progress toward export-oriented production. Enhancing infrastructure, capacity building, and cooperative linkages will be key for facilitating broader participation in global avocado value-chains. This suggests that most smallholder farmers use local markets, with avocado exports being minimal. Therefore, to gain an understanding of the avocado commercialisation process, smallholder farmers were asked about the accessibility and use of local and global avocado markets. Also, they were asked about the types of market information received from different sources and channels. To gain a detailed understanding, a five-point Likert scale was used ('Strongly Disagree', 'Disagree', 'Neutral', 'Agree', and 'Strongly Agree') (Table 3).

Table 3: Access and use of Local and Global Avocado Markets

Altitudinal Statement	SD (f, %)	D (f, %)	N (f, %)	A (f, %)	SA (f, %)	Mean
Easily access both local and international avocado markets to sell the produce	12 (7.5)	23 (14.3)	31 (19.3)	59 (36.6)	36 (22.4)	3.52
Compliance with the market standards and quality requirements demanded by buyers/exporters	9 (5.6)	18 (11.2)	33 (20.5)	65 (40.4)	36 (22.4)	3.63
Adequate marketing infrastructure (storage, roads, and collection centres) supports avocado trading	14 (8.7)	27 (16.8)	35 (21.7)	53 (32.9)	32 (19.9)	3.39
Access to reliable market information helps make better decisions on avocado sales	8 (5.0)	19 (11.8)	29 (18)	61 (37.9)	44 (27.3)	3.71
Overall Mean						3.56

Source: Field Data (2025)

4.2.3 Access to Local and International Markets

The findings presented in Table 3 indicate that smallholder farmers hold different opinions about the accessibility and use of avocado markets at different levels. The findings indicate that most smallholder farmers in Mufindi District have reasonable access to local and regional markets, but remain largely excluded from international markets. Local markets continue to serve as the main trading platform, offering farmers relatively stable demand and easier logistical access. However, engagement in global markets is limited by challenges such as inadequate export certification systems, high transaction costs, and weak linkages with foreign buyers. Many farmers lack awareness of

Henry George Mung'ong'o

international marketing procedures and the resources needed to meet export standards. As a result, while local trade has improved farmers' income levels, their potential to benefit from high-value global avocado markets remains underexploited. Also, compliance with market standards and quality requirements shows that smallholder farmers are increasingly meeting the standards and quality requirements demanded by buyers and exporters. But full compliance remains inconsistent due to limited access to technical training, inadequate post-harvest management skills, and the lack of modern equipment for fruit handling. Also, there is a failure to maintain a uniform quality, especially in meeting international export criteria that require specific fruit size, maturity, and packaging specifications. Consequently, a large portion of avocado produce is sold in local markets at lower prices, as reported by one respondent:

We usually sell our avocados to brokers who come directly to our farms. They offer prices that we cannot negotiate because we have no direct connection with big buyers or exporters who could pay more. Sometimes we hear that the same fruits we sold cheaply are resold in other regions at much higher prices, but we do not benefit from that profit difference. Even when we try to delay sales, the fruits spoil quickly because we lack proper storage facilities. We have no choice but to accept whatever price is offered to avoid losses. This makes it hard to plan or save from avocado sales because our returns depend entirely on what the brokers decide (Key informant interview, Ihalimba Ward, 06/09/2025).

This quotation shows that most farmers operate in informal, and buyer-driven market systems in which pricing power lies with brokers. Another participant emphasised that the lack of cooperative organisations and market infrastructure prevents farmers from accessing reliable and profitable buyers:

We tried selling together as a group last year because we thought it would give us a better price, but we had no collection centre or cold storage to keep the fruits. Some of them got spoiled before we could send them to the buyer in Iringa. The roads were also bad, and trucks were delayed for days, so buyers cancelled the deal. That experience made many farmers lose trust in collective selling, even though it can be good if we are well-organised. Without reliable transport and storage, we remain stuck selling to local traders who can pick up the fruits immediately (Key informant interview, Ikongosi Ward, 08/09/2025).

This shows that poor infrastructure weakens collective action and discourages farmers from pursuing cooperative marketing strategies. The lack of proper handling and logistics facilities increases post-harvest losses, thus disabling farmers from fully exploiting the growing regional and export demand for avocados. Generally, the findings indicate that three-quarters of the respondents reported that smallholder avocado farmers in Mufindi District face persistent barriers to accessing profitable markets. Brokers' dominance, inadequate infrastructure, and weak cooperative organisations have limited the integration of

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

farmers into export value-chains. Study participants expressed greater awareness of the importance of collective action, better roads, and direct buyer linkages. But most of them lacked the technical know-how, equipment, and financial resources needed to maintain export-grade standards. Farmers said that problems such as early harvesting, poor storage, and lack of sorting facilities often lead to buyers rejecting products and/or paying lower prices. One respondent explained:

Export buyers want avocados that are clean, uniform, and mature; but many of us do not know the exact harvesting stage they expect. Sometimes we pick too early to avoid theft or spoilage; however, by the time the buyers check, the fruit is still raw. They end up rejecting a big portion, and we lose money. We also do not have the machines for grading or the materials for proper packaging. If we had more training on post-harvest handling and simple equipment, we could produce fruits that meet export standards and earn more (Interview Respondent 3, Igowole Ward, 12/09/2025).

4.2.4 Compliance with Market Standards and Quality Requirements

Avocados are graded according to the level of maturity, size codes, and weight. Hass avocados are size 16–20, with dry matter content of 21%, and a weight of 80 grams; while Fuerte is size 14–16, with dry matter content of 20%, and a weight of 123 grams. They are also classified as extra class, which is of superior quality, with a shiny shape and clear colour, while class I consists of medium-quality avocados that do not qualify for the extra class criteria. The last is class II, which includes avocados that do not qualify for inclusion in the higher classes, but satisfy the minimum requirements as specified (URT, 2025). Therefore, these market standards and quality requirements hinder smallholder farmers when accessing local and global markets. The findings demonstrate that smallholder farmers are increasingly compliant with the market standards and quality requirements demanded by buyers and exporters.

This growing awareness is reflected in efforts to adopt improved grading, sorting, and packaging techniques that meet domestic and regional market expectations. However, full compliance is still inconsistent due to the unavailability of technical training, low post-harvest management skills, and limited availability of modern equipment for fruit handling. The farmers find it difficult to maintain consistent quality, especially when trying to meet the demands of international export markets, which require specific fruit size, ripeness levels, and packaging standards. That is why a large part of the avocado production is sold in local markets at low prices. Thus, there is a need for ongoing capacity building, extension support, and investment in post-harvest infrastructure for better product quality and competitiveness across domestic and global value-chains. Also, farmers observed that early harvesting, poor storage, and a lack of sorting facilities are among the factors that cause rejection of products by buyers and lower prices.

Henry George Mung'ong'o

Meeting certification requirements such as Global GAP or organic standards involves inspections, documentation, and fees that most farmers cannot afford. One respondent pointed this out during an interview:

For us small farmers, certification is something we only hear about but cannot manage. The companies that buy for export tell us we must be certified, but the process is expensive, and we do not have the money to pay for it. Even if we wanted to, we do not know where to start because it involves so many documents. It feels like these standards are made for big farmers with money, and not for people like us who are just starting commercial farming (Interview Respondent 4, Ihalimba Ward, 14/09/2025).

Moreover, farmers explained that most roads become impassable during the rainy season, thereby delaying transport and causing heavy post-harvest losses. Others noted that without proper storage, many avocados spoil before they can reach buyers, forcing farmers to sell quickly and at very low prices to avoid total losses. One respondent said:

The biggest challenge we face is transportation because our roads are terrible, especially during the rainy season. Sometimes we harvest good fruits, but the trucks cannot reach our farms for several days. The fruits start to rot, and we are forced to sell them cheaply to brokers who come with motorbikes to save something. It is heartbreaking to watch all that effort go to waste. If the roads were improved, buyers from Iringa and Mbeya would come more often, and we would not depend so much on middlemen who take advantage of our situation (Interview Respondent 5, Ihalimba Ward, 17/09/2025).

Inaccessible farms reduce buyer confidence, thus perpetuating dependency on intermediaries who exploit logistical challenges. Also, interview respondents noted that long distances to major markets further limit farmers' ability to access buyers directly to negotiate favourable prices. Some farmers travel more than 30 kilometres to the nearest market, thereon bearing high transport costs that cut into already thin profit margins, as per one interviewee:

To reach the main market, I have to travel almost thirty kilometres with my sacks of avocados. Sometimes we rent small trucks, but they charge a lot, and by the time we arrive, the prices have already fallen. The roads are rough, and some fruits get damaged along the way. After paying for transport, we have very little profit left. It feels like all our hard work benefits others more than us. If there were local markets or reliable transport services, many farmers would earn more and be encouraged to grow more avocados (Interview Respondent 6, Igowole Ward, 19/09/2025).

4.3 Farmers' Livelihood Enhancement from Avocado Commercialisation

The second research objective explored how avocado commercialisation has enhanced the livelihoods of smallholder farmers in Mufindi District by examining respondents' level of agreement with four statements on the livelihood benefits derived from avocado farming (Table 4).

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

Table 4: Commercialised Avocado and Farmers' Livelihood Enhancement

Altitudinal Statements	Strongly Disagree (f, %)	Disagree (f, %)	Neutral (f, %)	Agree (f, %)	Strongly Agree (f, %)	Mean
Commercialised avocado significantly increased household income	7 (4.3)	16 (9.9)	25 (15.5)	67 (41.6)	46 (28.6)	3.81
Improved household's food security	6 (3.7)	15 (9.3)	27 (16.8)	72 (44.7)	41 (25.5)	3.79
Creation of new employment opportunities within the community	10 (6.2)	19 (11.8)	30 (18.6)	65 (40.4)	37 (23.0)	3.62
Access better education and healthcare for family	9 (5.6)	18 (11.2)	28 (17.4)	69 (42.9)	37 (23.0)	3.67
Overall Mean						3.72

Source: Field Data (2025)

The findings in Table 4 show that most smallholder farmers perceived commercial avocado farming as a significant contributor to improved household income. Avocado farming has enabled many farmers to transition from subsistence agriculture to market-oriented production, allowing them to generate reliable income through sales in local and regional markets. The increased earnings have strengthened smallholder farmers' purchasing power and financial stability. The respondents reported that profits from avocado sales are often used to build houses, buy livestock, and pay school fees. Also, household food security has improved through avocado sales: farmers noted that the steady flow of income from avocado production enables them to purchase sufficient and nutritious food throughout the year, thereby reducing their dependence on seasonal crop harvests. The additional financial resources have also enhanced families' ability to withstand food shortages during droughts or market fluctuations in staple crops. Additionally, avocado cultivation contributes indirectly to food security by providing a valuable dietary supplement rich in essential nutrients.

Regarding employment, the findings recorded a mean score of 3.62; indicating that the commercialisation of avocado has created substantial employment opportunities within the local communities. The respondents emphasised that the sector has generated jobs across the value-chain production process: from farm labour, harvesting, and packaging, to transportation and trading. Particularly, the youth and women have benefited from casual and permanent employment in avocado production and processing activities. Many respondents described avocado farming as a turning point in improving their financial independence and standard of living. One respondent reported:

Henry George Mung'ong'o

Before I started planting avocados, my family's income was very low because we depended on maize, which often failed due to droughts. Now that my avocado trees produce every year, I can sell the fruits to traders who come to buy from my farm, and I get cash immediately. With this money, I have renovated my house, bought livestock, and paid my children's school fees without borrowing. It has also allowed me to save some money in a cooperative account, something I could never do before. Avocado farming has changed our lives completely; it feels like we finally have a steady source of income (Interview Respondent 9, Ihalimba Ward, 18/09/2025).

This quote shows that avocado farming has enabled many smallholder farmers to transition from subsistence to income-generating agriculture. Households that were once financially strained can now afford better housing and send their children to school regularly.

5. Discussion of the Findings

This study assessed the extent to which smallholder farmers access and use markets at both local and international levels, and how the commercialisation of avocado farming has enhanced their livelihoods. The findings reveal that access to, and use of, markets are central determinants of avocado commercialisation and its influence on the livelihoods of smallholder farmers. Most farmers had access to local and regional markets, but participation in international trade remained minimal due to many barriers, including high certification costs, poor infrastructure, limited cooperative strength, and inadequate technical knowledge. This situation suggests that the avocado value-chain in Mufindi District operates in a largely informal and fragmented manner, weakening farmers' market positioning and limits their ability to benefit from global demand, thereby impacting their livelihoods. These results align with those of Boniphace et al. (2023) and USAID (2020), who found that Tanzania's smallholder farmers mainly engage in local and regional markets because of constraints in meeting international standards and certification requirements such as maturity, cold chain logistics, poor fruit retention, inadequate knowledge of agronomic practices, pest management, and farm traceability.

Moreover, the findings show that strengthening cooperative systems could serve as an effective pathway for collective bargaining, improved price negotiation, and integration into global value-chains. Many farmers harvest avocados prematurely or use non-standard packaging, leading to rejections and lower prices. This supports Meemken's (2020) finding that complex and costly certification procedures often exclude smallholder farmers from export participation. Hence, these findings imply that limited technical skills, weak institutional support, and the absence of affordable quality control mechanisms hinder the ability of farmers to meet export-grade standards, thereby restricting them to low-value domestic markets.

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

The findings have also revealed that the commercialisation of avocado farming has significantly improved the livelihoods of smallholder farmers in Mufindi District. It has increased household income, enhanced food security, created employment opportunities, and expanded access to important social services such as healthcare and education. Farmers reported that income from avocado farming has enabled them to diversify their sources of earnings, improve their living conditions, and invest in their children's education and family healthcare. The findings imply that avocado farming has evolved beyond subsistence production into a strategic livelihood driver that contributes to poverty reduction and sustainable rural development. These findings support those of Sommaruga and Eldridge (2024) and Meemken (2020), who observed that avocado production in countries such as Mexico and Peru has improved rural livelihoods through improved household income and food security. Also, these findings support the findings by Boniphace et al. (2023) and TAHA (2023): all of whom noted that avocado cultivation has improved both nutrition and food access in the southern highlands of Tanzania.

Moreover, farmers reported better housing and increased enrolment in community health insurance programs; hence illustrating that income from avocado farming directly enhances household welfare. This aligns with Mitra et al. (2020), who identified similar patterns of job creation in horticultural sectors across SSA. Thus, the results confirm that avocado farming strengthens food and income security, and promotes social inclusion and equitable community development. Generally, the findings confirm that the commercialisation of avocado in Mufindi District, Tanzania, has emerged as a powerful catalyst for rural transformation. It has diversified income streams, reduced poverty, and improved food security; while also promoting youth employment and gender inclusion. Continued investment in farmer training, infrastructure development, and value addition will further increase productivity and profitability. Strengthening these dimensions will enhance smallholder farmers' resilience and prosperity, and contribute significantly to an inclusive and sustainable rural development in Tanzania.

6. Conclusion and Recommendation

The avocado sector (Tanzania's 'green gold') in Tanzania has huge potential to evolve into a key component of the nation's agricultural export portfolio, and make a significant contribution to rural development and economic expansion. While the sector's export values have grown significantly in recent years, its place in the global avocado market remains low; highlighting the need for purposeful and intentional actions to realise its full potential. To improve the product-level competitiveness of Tanzania's avocado sector in global markets, numerous strategic interventions are important. First, investments in cold chain infrastructure are crucial for preserving product quality, enabling competition in high-value markets, and minimising post-harvest losses.

Henry George Mung'ong'o

Second, it is imperative to create conditions that enable compliance with international standards, simultaneously helping smallholder farmers and exporters meet quality and safety standards and organic certifications that facilitate access to premium global markets.

Third, diversifying export choices and enhancing profitability can be achieved by encouraging value addition through the development of products such as processed meals and avocado oil. Finally, capacity building is vital. Strong stakeholder cooperation and the training of farmers and exporters on market demands, trade laws, and sustainable practices can boost the industry. In addition, strategies for facilitating trade will help eliminate current obstacles and foster smooth export operations. These strategies include expediting customs processes, negotiating trade agreements, and expanding access to financing. By following these strategies, Tanzania can enhance rural livelihoods, increase the economic and developmental benefits of its avocado industry, and strengthen its standing as a major player in the global agricultural export market.

Middlemen continue to dominate and restrict the bargaining power of farmers, which results in low prices at the farm-gate and low farm profitability. Also, the absence of organised marketing systems and cooperative structures has limited the capacity of smallholder farmers to meet export requirements and to negotiate for better terms in the market. Therefore, enhancing smallholder farmers' integration into domestic and international avocado value-chains via improved market access, including cooperative marketing, infrastructure development, and certification support is critical.

It is also important to note that the commercialisation of avocado farming has significantly improved the livelihoods of smallholder farmers in Mufindi District through increased income, improved food security, employment creation, and expanded access to social services. The sale of avocados has enabled families to generate incomes to meet their basic needs, afford school fees, access healthcare, and invest in other income-generating activities. It has also contributed to nutritional improvement through local consumption. Equally, its perennial nature provides a reliable and predictable source of income, thereby reducing household vulnerability to economic shocks. Thus, the farming of avocado is an important livelihood diversification strategy that promotes rural economic growth and sustainable community development in Mufindi District. The study recommends that the findings be used to strengthen the market information systems for avocados through the development of a reliable and efficient digital platform and a comprehensive avocado market database that provides farmers with real-time market information.

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

References

- Abu, B. M., Ocansey, C. O. & Ekumah, B. (2021). Market Access and Household Dietary Diversity: Evidence from Ethiopian Coffee Farmers. *Journal of Agricultural and Food Economics*, 9(1): 1–15.
- AECF. (2021). Avocado-growing Improves Livelihoods for Smallholder Farmers in Tanzania. <https://www.aecfafrica.org/stories/avocado-growing-improves-livelihoods-for-smallholder-farmers-in-tanzania>.
- Africado. (2023). *About Africado Tanzania*. Africado Profile Company Report.
- Amare, M., Mariara, J., Oostendorp, R. & Pradhan, M. (2019). The Impact of Smallholder Farmers' Participation in Avocado Export Markets on Household Welfare in Kenya. *Agricultural Economics*, 50(4): 619–632. <https://doi.org/10.1111/agec.12507>.
- Baloyi, R. T., Mbewe, D. N. & Belete, A. (2021). Constraints to Smallholder Farmers' Participation in Formal Markets: A Case of Vegetable Farmers in South Africa. *African Journal of Agricultural Research*, 17(6): 876–885.
- Boniphace, J., Kadigi, R. M. J. & Kangile, J. R. (2023). Effects of Avocado Farming on Livelihoods and Biodiversity: Perspectives of Smallholder Farmers in Hai and Rungwe Districts. *Open Journal of Social Sciences*, 11: 474–505 <https://doi.org/10.4236/jss.2023.1111032>.
- Creswell, J. W. (2023). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (3rd ed.). CA: Sage Publications.
- Ellis, F. (1983). Agricultural Marketing and Peasant-State Transfers in Tanzania. *Journal of Peasant Studies*, 10(4): 214–242.
- FAO. 2026. Major Tropical Fruits Market Review. Preliminary results 2025. Rome.
- Gereffi, G., Humphrey, J. & Sturgeon, T. (2025). The governance of Global Value Chains. *Review of International Political Economy*, 12(1): 78–104. <https://doi.org/10.1080/09692290500049805>.
- Hoddle, M. & Mound, L. (2020). Surveys for Thrips (Thysanoptera) Associated with Avocados (*Persea americana*) in Mbeya, Tanzania. *African Entomology*, 28(1): 195–197. <https://doi.org/10.4001/003.028.0195>.
- ITC. (2024). *Market Analysis Tools for Avocado Exports*. International Trade Centre, Geneva, Switzerland. <https://www.trademap.org/>.
- Juma, I., Fors, H., Hovmalm, H., Nyomora, A., Fatih, M., Geleta, M., Carlsson, A. & Ortiz, R. (2019). Avocado Production and Local Trade in the Southern Highlands of Tanzania: A Case of an Emerging Trade Commodity from Horticulture. *Agronomy*, 9(11): 1–24. <https://doi.org/10.3390/agronomy9110749>.
- Kaplinsky, R. & Morris, M. (2001). *A Handbook for Value Chain Research*. IDRC.
- Kingu, E. J. & Kinyondo, G. (2024). Evaluation of Avocado Production and Export as a Source of Prosperity to Smallholder Farmers: A Case of Wanging'ombe District, Mdandu Division, Tanzania. *African Journal of Empirical Research*, 5(3): 748–757. <https://www.ajol.info/index.php/ajempr/article/view/286464>.

Henry George Mung'ong'o

- Kramer, K. (2024). *Getting Smashed: the Climate Danger Facing Avocados*. Christian Aid.
- Kumar, R. (2011). *Research Methodology: A Step-by-step Guide for Beginners*. 3rd Ed. London. SAGE Publications Ltd.
- Lutta, W., Amare, M. & Nyikal, R. (2024). Challenges and Opportunities for Upgrading the Avocado Value Chain in East Africa. *African Journal of Agricultural Research*, 20(3): 123–140.
- Malekela, A. (2022). Value Chain Challenges: Experiences from Avocado Farmers and Traders in Njombe Town, Tanzania. *East African Journal of Education and Social*, 3(2): 17– 25. <https://doi.org/10.46606/eajess2022v03i02.0155>.
- Meemken, E. M. (2020). Do Smallholder Farmers Benefit from Sustainability Standards? A Systematic Review and Meta-Analysis, 26. Doi- 10.1016/j.gfs. 2020. 100373.
- Mitra, A., Rao, N. & Mwaura, G. (2020). Scoping Review of Farmers' Organizations in Sub-Saharan Africa and India: Collective Action for Smallholder Market Access. *Agricultural Systems*, 185: 102952.
- Mitra, S., et al. (2020). A Scoping Review of the Contributions of Farmers' Organizations to Smallholder Agriculture. *Nature Food*, 1: 620–630.
- Mlenga, D. H., Mgeni, C. P. & Temba, G. R. (2020). Agroecological Zones and Their Influence on Crop Production in Mufindi District, Tanzania. *Tanzania Journal of Agricultural Sciences*, 19(2): 123–134.
- Mujuka, E., Mburu, J., Ogutu, C. & Ambuko, J. (2023). Returns to Avocado Orchard Investment in Medium Altitudes: Effects of Tree Density and Farm Management in Tanzania. *Frontiers in Sustainable Food Systems*, 7: 1086664.
- Muñoz, A., Huaraz, C., Medina, Á., Rosadio, R., Castro, D. & Trigozo, T. (2023). Elasticity of Demand for Avocado to the European Market and the United States, Years 2010–2020. *Migration Letters*, 20(S9): 629–652. <https://doi.org/10.59670/ml.v20is9.4834>.
- Ngailo, T. J. & Rutalebwa, E. (2024). Assessing Gender Vulnerability to Climate Change among Avocado Smallholder Farmers: the Case of Southern Tanzania Highlands. *Journal of Geoscience and Environment Protection*, 12: 75–97. <https://doi.org/10.4236/gep.2024.1212005>.
- Niguse, T. & Mebratu, A. (2023). Determinants of Avocado Commercialization Among Smallholder Farmers in Shebediono Woreda, Sidama Zone of Ethiopia. *Journal of Agricultural Extension*, 27(4): 89–102.
- Oya, C. (2012). Contract Farming in Sub-Saharan Africa: A Survey of Approaches, Debates, and Issues. *Journal of Agrarian Change*, 12(1): 1–33.
- Patton, M. Q. (2015). *Qualitative Research and Evaluation Methods: Integrating Theory and Practice*. SAGE Publications, Inc. 4th ed.
- Ponte, S & Juhan, K (2004). Farmers & Markets in Tanzania: How Policy Reforms Affect Rural Livelihoods in Africa. *Journal of the International African Institute*, 74(2): 306. <https://doi.org/10.2307/3556948>.

Smallholder Farmers' Access and Use of Local and Global Avocado Markets

- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Reuben, F. & Meliyo, J. (2022). Unlocking Opportunities in Edible Oil Crop Production and Market Dynamics to Accelerate Agricultural Investment in Kagera Region, Tanzania. *International Journal of Environment, Agriculture and Biotechnology*, 7(3): 128–132. <https://doi.org/10.22161/ijeab.73.17>.
- Sawe, J. R. (2022). Access to and Use of Agricultural Information for Smallholder Farmers' Adaptation to Climate Change in Iringa Rural District, Tanzania. *University of Dar es Salaam Library Journal*, 17(2): 54–71.
- Sok, S., Chheng, K. & Eas, T. (2021). Climate Variability and Smallholder Farmers' Vulnerability in Northwest Cambodia. *Journal of Rural Studies*, 87: 356–367.
- Sommaruga, R. & Eldridge, H. M. (2024). Avocado Production: Water Footprint and Socio-Economic Implications. *Global Food Security*, 40: 100733.
- Steffens, J., Brüssow, K. & Grote, U. (2020). A Strategic Approach to Value Chain Upgrading-Adopting Innovations and Their Impacts on Farm Households in Tanzania. *Horticulturae*, 6(2): 1–22. <https://doi.org/10.3390/horticulturae6020032>.
- Tanzania Horticultural Association [TAHA] (2022). *Tanzania's Horticultural Export Performance Report 2023*. Arusha, Tanzania.
- Thomas, H. & Makundi, H. (2020). Global Value Chains as a Stimulant for Innovation among Producers: Evidence from Avocado Farmers in Siha District, Tanzania. *Tanzania Journal of Development Studies*, 18: 94–111.
- UNDP. (2020). *Impact of Climate Change on Agriculture in Tanzania: Vulnerability and Resilience Strategies*. United Nations Development Programme. Retrieved from www.undp.org/tanzania.
- UNECA. (2022). AfCFTA: Opportunities for Agricultural Exporters. United Nations Economic Commission for Africa (UNECA).
- United Republic of Tanzania (URT). (2025). Investment Opportunities in the Avocado Value Chain, Tanzania. The Tanzania Investment Centre (TIC).
- USAID. (2020). *Mboga na Matunda Project Impact Report*. Feed the Future Tanzania. <https://www.usaid.gov/tanzania/documents/mboga-na-matunda-impact-report-2020>.
- World Bank. (2019). *Tanzania: Agriculture Sector Overview*. World Bank. <https://www.worldbank.org/tanzania>.
- Yamane, T. (1973). *Statistics, An Introductory Analysis*. 2nd Ed. Harper and Row Limited.