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Household Land Fragmentation and Adaptation Strategies in Moshi District Council in Tanzania

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Abstract

Increased population in the slopes of Mount Kilimanjaro has created pressure on existing land resources. This study examines the implications of land fragmentation on household agricultural practices in high population density areas in Moshi District Council, and how households adjust themselves to these implications. It used an explanatory sequential mixed method approach that combines household surveys, key informant interviews, and focus group discussions. The quantitative data were collected from 400 respondents randomly selected from households across three villages. The findings revealed that Moshi District was experiencing an increase in population, which led to household land fragmentation. Such fragmentation has resulted into the decline in farm size, household income, and food shortage in households. To combat these adverse effects, households have adopted various strategies to cope with the impacts to sustain their livelihoods. These strategies include agricultural intensification and diversification, investing in children's education, engaging in non-agricultural activities, hiring land from other places, and doing casual labour. The observed widespread adaptation of these households strategies indicate that households are not mere passive victims of land fragmentation, but are also active participants adopting to the effects of land fragmentation. It is recommended that national policies and land development programmes should support community initiatives to strengthen their adaptation strategies to sustain households' best livelihood practices at the local and national levels.

Keywords: *land fragmentation, households, adaptation, Moshi, Tanzania*

1. Introduction

Land fragmentation is a practice that is found in many areas throughout the world. Despite causes of land fragmentation varying from country to country, and from region to region, there is a general agreement that the four main factors that cause land fragmentation are inheritance, population growth, land markets, and historical/cultural perspectives (King & Burton, 1982; Bentley, 1987; Niroula & Thapa, 2005; Tan et al., 2006; Van Hung et al., 2007). Land fragmentation continues to be a global issue, with more than 60% of the world's population expected to be living in areas classified as urban by 2030 (Narduci et al., 2019). This constant population growth presents challenges for rural and agricultural lands worldwide, causing pressure for land fragmentation (Hartvigsen, 2014). Population growth

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usually leads to subdivision of land into smaller and scattered plots. Land fragmentation holdings usually prevent mechanization, reduce economies of scale, complicate land management, and contribute to environmental degradation.

Land fragmentation refers to the process whereby land is divided into smaller and scattered plots (Bromley, 1989). This situation is especially common in areas with high population densities, where increasing demand for land puts pressure on the available land (Ayalew et al., 2011. Land fragmentation is a growing challenge in many developing countries, including those in Sub-Saharan Africa (SSA), where land fragmentation—which is mainly driven by rapid population increase, traditional land inheritance, and poor land management—has become a normal thing in rural areas (Jayne et al., 2014). In East Africa, land fragmentation is considered an obstacle to agricultural productivity, wild-life conservation, and mobile pastoralism (Kariuki et al., 2021). This is primarily caused by land tenure and policy, increased human population, expansion of settlements, agricultural farms, road networks and urban development (Liu et al., 2019; Gomes et al., 2019; Niroula et al., 2005).

In Tanzania, land fragmentation is continuously becoming visible in both rural and urban areas. The country's rapidly growing population, which reached 61 million in 2022 (NBS, 2022), puts pressure on land resources, particularly in high-potential agricultural and urbanization areas (URT, 2021). This is the case with the Moshi District Council, in Kilimanjaro Region, Tanzania, where land fragmentation has become more visible over the years (Alphonce, 2013). The district provides a clear example of the growing problem of land fragmentation in high density population areas along the slopes of Mount Kilimanjaro. As the population continues to grow and compete for limited resources, land is frequently subdivided among family members, resulting in small landholdings that are often not economically sustainable (NBS, 2022; URT, 2021; Kombe, 2005). This has had significant effects on agricultural productivity, land management, and the overall livelihoods of its communities (Byiringiro & Reardon, 1996). As a result, households have assumed various adaptation strategies to respond to land fragmentation and its effects on production in agricultural practices. These strategies are related to farming methods and management decisions adopted by households in utilizing land and other resources for crop and livestock production; which are influenced by land size, fragmentation, labour availability, and livelihood needs (Swai, 2016; FAO, 2011). Such adaptation strategies include agricultural intensification, mixed farming, irrigation, use of improved seeds, and livelihood diversification (Kabote et al., 2023).

The aim of this study is to examine the household adaptation strategies to land fragmentation in agricultural practices in high population density areas in Moshi District Council, where land remains a fundamental asset for most of the population to earn their daily livelihoods.

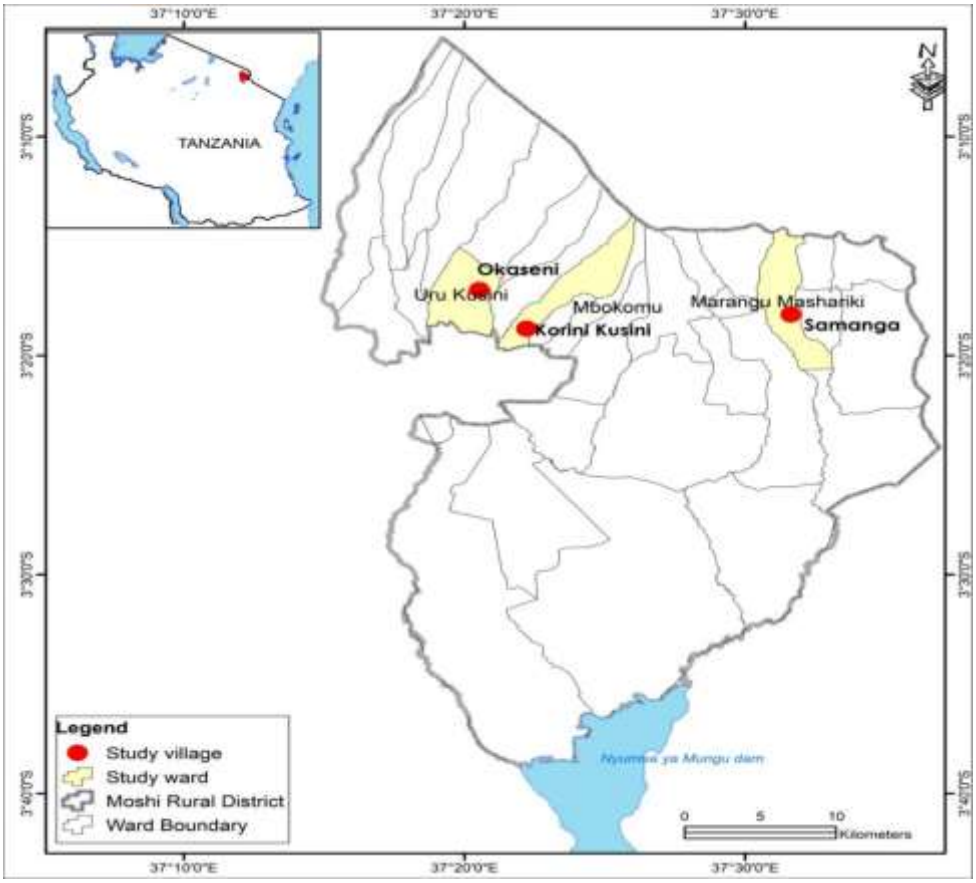
The article is presented in four main sections. Section one introduces local and global issues regarding densely populated areas and land fragmentation. The second section is on the theoretical perspective and context; while the third section focuses on the research methodology. The fourth section is on the results and discussion; while the fifth and last section contains the conclusion and recommendations of the study.

2. Theoretical Perspectives and Context

This article is guided by Boserup's theory (1965), which argues that as population increases, farmers intensify land use and crop diversification through shorter fallow periods, high labour inputs, and the adoption of more improved technologies in agriculture. According to Boserup, population increase is not a problem, but an opportunity for innovation since a human population provides labour and stimulates the development of advanced technologies. Boserup argued that population growth stimulates human ingenuity to overcome food shortages through technological advancement and land use intensification. This theory is relevant to household land fragmentation that is closely related to rapid population growth, cultural land inheritance, and land subdivision into smaller parcels. Once land becomes too fragmented and scarce, households are compelled to adopt various adaptation strategies for agricultural practices. Even though the theory mainly emphasizes population growth as the key cause of agricultural intensification, the study modifies the theory associating extra socio-economic and ecological factors affecting household adaptation strategies in the study area. The adaptation strategies were not only shaped by population growth and land fragmentation, but also by climate change, decline in soil fertility, education level (Mbonile et al., 2005), household income, and access to agricultural inputs. The theory is appropriate in this study because it relates land fragmentation and decline of farm sizes directly with dynamics in agricultural practices and adaptation behaviour of households. As indicated in Hakansson (1989), population growth has a direct link with agricultural intensification on subsistence agriculture.

3. Methodology

The study was conducted in Moshi District Council, particularly in three wards: Uru South, Mbokomu, and Marangu East. The district is one of the six districts that form the Kilimanjaro Region. The other districts include Rombo, Same, Mwanga, Hai, Moshi Municipal, and Siha. The Moshi District Council lies between longitude 37° to 38° East, and latitude 2° - 30′ - 50° South of the Equator. To the north the district borders Rombo District, to the East it borders Kenya, to the South it borders Mwanga and Simanjiro districts, and to the West it borders Hai District (Moshi District Council, 2024). Figure 1 maps the three wards covered by the study—Uru South, Mbokomu, and Marangu East—with one representative village selected from each ward; i.e., Okaseni, Korini South, and Samanga, respectively.



Map 1: Location of Moshi District Council and the Study Villages
Source: Cartographical Unit, Department of Geography, UDSM, 2026

The study employed an explanatory sequential mixed methods design approach. This design involves a two-phase method of data collection in which one collects quantitative data in the first phase, analyses the results, and then uses the results to plan (build on to) the second qualitative phase (Creswell & Creswell, 2018). This design is cost effective and takes lesser time while guaranteeing good quality data. Further, both purposive and simple random sampling techniques were employed in the selection of the study areas and respondents (Creswell, 2012; Creswell, 2014). Whereas stratified sampling and simple random sampling techniques were employed to select three wards and the three villages in the respective wards, a representative sample size of households for a quantitative phase of the research was computed using Yamane's formula (Glenn, 1992):

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

Where: N = population size (total number of households); e = margin of error substituting values into the formula (a population of 19,156 households, with a confidence level of 95% and a 5% margin of error). A representative sample size for the quantitative phase one was rounded up to 399.979 ≅ 400 households.

Moreover, the proportion of the sample for each of the three villages was computed through the following formula:

$$n = N\frac{Pi}{P} = \text{sample proportionate to a given village}$$

Where: n = sample size, N = original estimated sample size by Yamane's formula, Pi = village household population, P = total number of selected villages' household population.

Substituting values into the formula, the proportional sample sizes for the studied villages were as indicated in Table 1. A total of 400 respondents were randomly selected from all three villages. Simple random sampling was used to ensure that every respondent had an equal chance of being selected.

Table 1: Sampling Frame and Sample Size for Quantitative Household Survey

Ward	Village	No. of Households	Sample Size	Total (%)
Uru South	Okaseni	4,279	89	22.25
Mbokomu	Korini South	10,685	223	55.75
Marangu East	Samanga	4,192	88	22.0
Total		**19,156**	**400**	**100**

Source: NBS (2022), Moshi District (2016), and Village Executive Offices

Both quantitative and qualitative techniques were used in data collection and analysis. Household surveys, with close-ended questions, were administered to 400 respondents; while open questions were administered to members of the focus group discussion (FGD) and key informants (KIs). KI interviews (KIIs) were conducted with different groups of people (female and male small farmers, 3 ward councillors, 3 ward executive officers and youth farmers); while the FGD was conducted with one group composed of five people (1 agricultural extension officer, 1 village executive officer, 1 village chairperson, and 2 influential farmers) in the study villages. The FGD and KIIs were conducted to validate the information gathered through the quantitative method. Field observation was also used to verify some information, particularly on land fragmentation and household adaptation strategies in the study area. The information collected through quantitative and qualitative techniques were cross-tabulated to arrive at a consensus about the reality during the data analysis and presentation.

4. Results and Discussion

4.1 Synthesis of Population Growth and Land Fragmentation

The population shows a consistent increase throughout the entire censuses conducted from 1988 up to 2022 (Table 2). The population of Moshi District Council increased from 342,369 in 1988 to 535,803 in 2022 (NBS, 2022). This means that a total of 193,434 people increased between the 1988 and 2022 censuses. However, the growth rate has not remained constant. The population growth rate dropped significantly from 1.9% in 1988 to 1.1% in 2002, and then slightly increased to 1.3% in 2012 and 1.4% in 2022. Meanwhile, household size decreased from 5.4 in 1988 to 3.7 in 2022 (2022, TPHC). This fluctuation suggests that while the population continued to grow, the rate of growth became moderate over time, or got more controlled as time passed. Possibly, this could have been due to changing fertility patterns, migration trends, or even improved access to family planning. A notable trend is the continuous decline in the average size of households, which dropped from 5.4 persons per household in 1988 to 3.7 in 2022 (Table 2).

Table 2: Population Change in Moshi District Council (1988 – 2022)

Census	Population				
Year	*Males*	*Females*	*Total*	*GR%*	*Household Size*
1988	160,188	182,623	342,369	1.9	5.4
2002	192,238	209,131	401,369	1.1	4.6
2012	225,767	240,070	466,737	1.3	4.2
2022	261,950	273,853	535,803	1.4	3.7

Source: NBS (2002, 2012, 2022) TPHC (2022)

Since 1988 Moshi District Council has experienced a rapid population increase due to high birth rates, improved healthcare services, and rural-to-urban migrations. Consequently, population growth has increased land demand for agriculture, settlements, social services, and infrastructure. This has intensified pressure on land resources, thus contributing to more land fragmentation in highly densely populated areas in Moshi District Council. The findings in Table 3 on the perceived trends of land fragmentation reveal a clear shift over three decades. During the first decade (from 1988–1998) most of the respondents (90%) perceived that land fragmentation had 'strongly decreased', while 5% indicated there was 'no change'; and another 5% opted for 'strongly increase' of land fragmentation. Between 2002 and 2012, most respondents (70%) opted for 'strongly increase' as far as land fragmentation was concerned, which revealed a sign of land pressure; 20% and 10% went for 'strongly decrease' and 'no change' in land fragmentation, respectively. In the 2012–2022 period, most of the respondents (85%) thought that land fragmentation had 'strongly' increased in the study villages (Table 3).

Table 3: Perceptions of Land Fragmentation Trends in the Study Area

	Strongly Decreased	No change	Strongly Increased	Dominant Perceptions
Decade	*(%)*	*(%)*	*(%)*	*Status*
1988–1998	90	05	05	Strongly decreased
2002–2012	20	10	70	Strongly increased
2012–2022	10	05	85	Strongly increased

Source: Field data (2025)

The findings are consistent with the observations by Maro (1995), Misana et al. (1997), Soini (2005), and URT (2022): all of which noted that the pattern of land fragmentation perceptions from 'strongly decreased' in the period between 1980s–1990s, and 'strongly increased' in the period between 2010s–2020s, were aligned with the broader land use research in the Kilimanjaro landscape, which showed progressive fragmentation of household landholdings due to demographic pressures and human settlement expansions. This has been caused mainly by factors associated with the needs of the increased population and land inheritance systems on limited arable land. In general, land fragmentation has become a challenge for agricultural practices and household livelihoods; and this calls for the need to put in place better land use planning policies, and sustainable land resources management systems.

Household size has an important role in shaping how land is distributed, used, and managed in a household. The findings revealed that land fragmentation is real in the study area, and that more than three quarters of the households (78%) possess land size of less than one acre, while very few (10%) have more than 5 acres per household (Table 4). Households with more than 4 members were affected more by household land fragmentation reported by more than 83% of the total respondents. However, households with 1–2 members possessed relatively larger portions of land size of between 1–5 acres as reported by 10% of the respondents, contrary to those with larger household sizes above nine (9+) members who have land size of less than 2 acres (Table 4). This implies that the bigger a household, the bigger the direct impact on household land distribution, thence pressure on land resources.

Table 4: Household Size and Land Fragmentation in the Study Area

	<1acre	1–2acres	3–4acres	5>acre	Total
Household size	%	%	%	%	%
1–2 members	78.7	8.0	3.3	10.0	100
3–4 members	83.3	13.1	2.4	1.2	100
5–6 members	90.8	6.6	1.5	1.1	100
7–8 members	83.1	9.9	5.6	1.4	100
9+ members	89.5	10.5	0.0	0.0	100

Source: Field data (2025)

These findings are similar to those of Niroula and Thapa (2005), who noted that land fragmentation tends to increase with population growth and generational transfer of land, which in turn reduces the land for agricultural use. A study by Jayne et al. (2014) in Southern Asia noted that when household landholdings become too small to support agricultural practices, households were increasingly pushed into non-agricultural activities to diversify income sources and meet basic needs. This pattern was clearly noted in Moshi District Council as land pressure grew in highly densely populated areas. The findings are also similar to Nguyen et al.'s (2021) study in Northern Asia, which noted that medium-sized households often fell into a 'social vulnerability trap' as they were too large to sustain themselves on fragmented land and generate surplus from agriculture.

The findings in Table 4 also show that there is an immense pressure on household land in the study area. Households with many family members subdivided their land into small parcels, and distributed these among their members. This usually reduces agricultural productivity within a household, and hence makes it difficult to sustain livelihood through agriculture alone. This observation was also affirmed by one FGD participant, who commented thus:

> *Households with many members are obliged to subdivide their farms (*vihamba*) to their children because it is their right; and it is rooted in our culture. There is no way we can avoid this, particularly to our sons, although nowadays due to cultural dynamics daughters are also given land; particularly those who are still spinsters. If a spinster marries and invites her husband to live on the farm, and unfortunately later her husband or sons die, they are not allowed to be buried on the inherited land except for the mother and her daughters. This is because the husband and sons do not belong to the lineage of the wife's parents (**FGD participant in village A, a 64-year-old female, January 2025**).*

4.2 Factors Influencing Household Land Fragmentation

There are various determinants of land fragmentation, especially in rural areas in Tanzania where agriculture remains dominant as the main source of household livelihood. During fieldwork, the respondents were asked to indicate their level of agreement with the statements regarding the causes of land fragmentation in Moshi District Council. The findings as shown in Figure 1 indicate that most respondents (93.5%) 'strongly agreed' that increase in household size was the key factor to land fragmentation; while 91.2% attributed land fragmentation to traditional land inheritance law. Furthermore, 79.5% of the respondents associated land fragmentation with the expansion of human settlements in the area, and 69.3% attributed land fragmentation to land uses/land cover changes. Moreover, 59% of the respondents attributed land fragmentation to the nature of farmland in terms of size (Figure 1). A farmland with a size of less than half an acre is not subdivided further, rather members in such households would be advised to migrate to other regions in Tanzania.

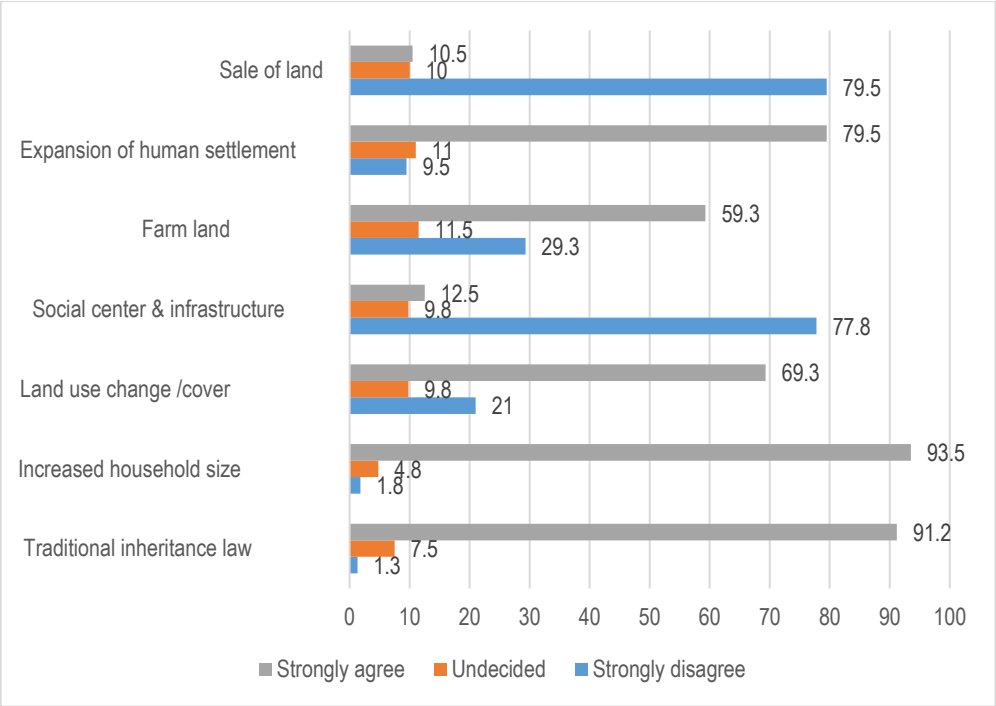


Figure 1: Factors Influencing Household Land Fragmentation

Source: Field data (2025)

As per Kirey (2018), a household with limited land was advised to search for alternative land outside Kilimanjaro region since no one in the area would be ready to sell his/her *kihamba* (family land) because the selling of family land has some negative socio-economic impacts that can lead to further land conflicts. Actually, selling family land contradicts the Chagga customary land tenure norms: no one sells the land on which his/her ancestors have been buried. Indeed, clan land is not for sale; it can only be inherited.

The findings of this study further align with those of Mayele et al. (2024) and Kironde (2006), who noted that land inheritance in East Africa was a primary determinant for reducing farm size; while population increase and scarcity of arable land were also determinants to land fragmentation. Similarly, Kombe and Kreibich (2000) again noted that the expansion of settlements and informal land allocation systems in peri-urban areas of Tanzania mainly contributed to land fragmentation, particularly in high population density areas.

The findings on the factors influencing household land fragmentation were also supported by one of the participants in an FGD, who confirmed the following:

> *In Moshi District Council people have been experiencing an increase of land fragmentation, primarily caused by cultural practices related to the inheritance law and the expansion of human settlements. Traditionally, land is inherited by sons; with parents often distributing parcels of land once a son gets married. However, in recent times, some households have also began allocating land to their daughters, especially in households with only daughters, as a way of preventing household conflicts and promoting fairness to children regardless of sex (**FGD a 68-year-old male participant in village C, November, 2025**).*

This observation proves that household land fragmentation is real in the study area, and the National Land Policy (URT, 1995; revised in 2021), identifies land fragmentation as a growing issue. This affects agricultural productivity and rural development; and calls for reforms in land use planning, tenure, and cultural inheritance systems. This is necessary to help farmers integrate land use planning and gender-sensitive issues in land distribution in Moshi District Council, and in other areas with high population densities in Tanzania.

4.3 Implications of Household Land Fragmentation

Land is an essential and basic resource for rural households, especially in agricultural economies where it is the basis of food production, household income and general livelihood sustainability. The findings in Table 5 indicate that land fragmentation had various negative impacts on household means of earning a living in the study area.

Table 5: Implications of Household Land Fragmentation

	Strongly disagree	**Undecided**	**Strongly agree**
Impacts of land fragmentation	%	%	%
Decline in farm productivity	1.0	4.0	95
Off-farm activities	2.0	5.0	93
Limited agricultural mechanization	7.0	4.0	89
Increased use of agrochemicals	5.0	4.0	91
Shifting to agricultural subsistence	6.0	5.0	89
Increased pressure on marginal land	6.0	7.0	87

Source: Field data (2025)

Table 5 shows that most of the respondents (95%) strongly agreed that 'decline in farm productivity' was the worst impact on households, followed by 'off-farm activities' that was mentioned by 93% of the respondents. Furthermore, 'increased use of agrochemicals' was mentioned by 91% of the respondents; while 'limited use of agricultural mechanization' and 'shifting from cash crops to subsistence' were mentioned by 89% of the respondents. 'Increased pressure on marginal land' was also noted by 87% of the respondents. The results are consistent with the findings by Kombe and Kreibich (2000), who noted that land

fragmentation in densely populated areas in Tanzania limits economies of scale in agriculture, thus reducing household agricultural yields. Similarly, Leta et al. (2022) and Swai (2016) noted that shrinking landholdings result in insufficient household food production, particularly in rural areas. Moreover, Tacoli (2004) observed that land pressure and fragmentation push rural farmers into informal salaried work or petty trade to earn their means of living in Tanzania.

The study findings further revealed that household land fragmentation is the source of the decline in farm productivity, and the use of marginal lands. This was affirmed by one of the participants during an FGD, who gave the following comment:

> *There are many impacts brought about by land fragmentation that are clearly visible, such as a decline in general agricultural production, increased use of marginal lands, and the occupation of steep slopes. Even more concerning is how our lifestyle has changed compared to our old golden days during which we enjoyed a big* kihamba *and bulk yields, while nowadays we just harvest for subsistence (**A 59-year-old woman FGD participant in village B, February 2025**).*

A study in Uganda by Ali and Deininger (2020) equally noted that land fragmentation hindered bulk food crop production, leading to low farm output. Similarly, Sheng et al. (2017) observed that land fragmentation in Australia resulted into lower productivity, which was associated with high operational costs and the lack of economies of scale. The study findings are also in line with Swai (2016), who found that the decreasing land productivity in Kilosa, Tanzania, was due to land fragmentation. The same findings are consistent with those of Di Falco et al. (2010) in Bulgaria, Manjunatha et al. (2013) in India, Latruffe and Piet (2014) in France, and Niroula and Thapa (2005) in South Asia: all of which reported that land fragmentation reduced the growth and output of agricultural production. Likewise, Tran and Vu (2021) noted that land fragmentation in Vietnam made food security worse, and reduced rural households' income.

4.4 Household Land Fragmentation Adaptation Strategies

Following the adverse impacts of land fragmentation on household agricultural practices in areas with high population densities in Moshi District Council, households adopted various strategies to cope with land fragmentation challenges to sustain their livelihoods. Adaptation strategies differ from one household to another depending on the intensity of the impact on the respective household. The findings show that a substantial majority (88%) of the respondents adopted agricultural intensification, followed closely by those investing in children's education (84%) (Table 6). The findings on agricultural intensification align with Boserup (1965), who argued that when population increases, farmers intensify agricultural production and adapt improved technologies to increase farm productivity.

Table 6: Household Adaptation Strategies

	Strongly Disagree	Undecided	Strongly Agree
Household adaptation strategies	%	%	%
Agricultural intensification	11	1	88
Livelihood diversification	18	1	81
Migration	30	2	68
Engagement in casual labour	31	1	68
Investing in children's education	14	2	84
Non-agricultural activities	20	2	78
Hired land from other places	20	5	75

Source: Field data (2025)

Furthermore, Mbonile et al. (2003) noted that investing in children's education in Kilimanjaro has enabled their young generation to be employed in the formal sector in the government, NGOs, and in the private sector; with some managing to establish large business enterprises, thereby enabling them to become less dependent on land resources. These findings are also in line with the observation made by URT (2021), which underscored the fact that education is the most important long-term household adaptation strategy as a path to break dependence on land resources and secure household livelihoods.

Table 6 shows that livelihood diversification was mentioned by 81% of all the respondents, while non-agricultural activities were reported by 78%. Furthermore, three-quarters (75%) of the respondents hired land from other places to compensate for the land needed to sustain household food supply; while 68% migrated from their rural areas. Engagement in casual labour was also observed in the study area as it was reported by 68% of the respondents. Similar findings were also observed by Latruffe and Piet (2014), who noted that intensification and diversification of agriculture remain crucial in rural areas as households try to subsidise production on fragmented plots through improved farming practices and crop varieties. This aligns with Bryceson's (2002) study, which found that rural households in Tanzania often relied on wage and remittances from household migrants to supplement incomes and reduce household income shocks. The findings are supported by one key informant in an interview who affirmed:

> *After I realized that my household income was declining due to land fragmentation, I decided to come up with different solutions by adopting various strategies to cope with the impacts of household land fragmentation. I decided to switch to agricultural intensification and investing in children education. I have also allowed my children to seek and purchase land far from here* (***A 70-year-old male KI from village A, January, 2024***).

Following the comment, it is evident that agricultural intensification is a solution to land fragmentation for many households in the study area. This includes

engaging in the use of modern fertilizers, better improved seeds, mixed cropping, agroforestry, and farm irrigation: all to help increase farm production from limited land sizes. Similar findings on agricultural intensification were noted by Boserup (1965), who argued that the use of modern agricultural inputs significantly boosts household farm production and productivity.

In general, the findings have shown that the adaptation strategies of households are multi-dimensional; combining on-farm intensification, off-farm activities, and human capital investments. Likewise, Barrett et al. (2001) noted that households' agricultural and livelihoods diversification are the central strategies to rural community survival and sustainability. In response to land fragmentation, many households in Moshi District were compelled to engage in livelihood diversification, particularly in non-farm and off-farm activities, as well as in hiring land from other places to generate additional income to sustain their livelihoods.

5. Conclusion and Recommendations

The study findings have established that land fragmentation in densely populated areas in Moshi District Council is real; and that this has triggered various adverse effects on household agricultural practices which are the sources of livelihoods in the area. The adverse effects include decline in farm productivity, migration, limited use of agricultural mechanization, extensive use of agrochemicals, shift from large scale farming to subsistence farming, as well as increased pressure on marginal lands. In response to these adverse effects, households have adopted various adaptation strategies to cope with the situation. These include agricultural intensification (increased use of fertilizer, use of improved seeds); livelihood diversification (such as engaging in non-farm and off-farm activities); as well as investing in children's education that enables them to be formally employed in government, NGO, and private sectors.

The widespread observed adaptation strategies of households indicate that households are not passive victims of the adverse impacts of land fragmentation in densely populated areas, but are also active participants in adapting to the effects of land fragmentation as observed in their livelihood adjustment strategies to manage—and even benefit from—fragmented land parcels. Hence, national policies and land development programmes should support and help farmers to strengthen their adaptation strategies to sustain household livelihood practices in densely populated areas with land fragmentation at the local and national levels.

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