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Indigenous Poultry Keeping for Securing Smallholders' Livelihoods: A Case Study from Tanzania.

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List of abbreviations

CEPIL	Centre for Public Interest Law
CHF	Community Health Fund
ENSO	El Niño-Southern Oscillation
GDP	Gross Domestic Product
GoT	Government of Tanzania.
IMF	International Monetary Fund
ISODEC	Integrated Social Development Centre
MALF	Ministry of Agriculture, Livestock and Fisheries
MDGs	Millennium Development Goals
MMA	Match Maker Associates
NCA	Norwegian Church Aid
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund
SEND-Ghana	Social Enterprise Development Foundation of West Africa-Ghana
SLDP	Small Holder Livestock Development Project
TLMI	Tanzania Livestock Modernization Initiative
TZS	Tanzanian Shilling
UNICEF	United Nations International Children Emergency Fund
VICOBA	Village Community Banks
URT	United Republic of Tanzania

Appendices

1. Map of Manyara region showing Babati rural district.

Indigenous Poultry Keeping for Securing Smallholders' Livelihoods: A Case Study from Tanzania.

ABSTRACT

There is a high demand for indigenous chicken in Tanzania because of the widely held belief that indigenous chicken is healthier than exotic chicken. Even when they are sick, they are given medicine even a few days before being slaughtered for the market. Because of this perception in Tanzania, the potential for the indigenous poultry industry remains largely untapped. s

Since 1989, Kilimanjaro and the other regions have been facing significant risks from climate change, with a rise in mean temperature, a decrease in annual precipitation, and the rainfall pattern increasingly becoming unimodal. The people in these regions face the risk of a decline in crop production and its associated negative consequences. Therefore, a coping strategy is needed to mitigate climate change for the people in these regions. The chosen coping strategy should meet the following criteria: it must not require massive capital so that everybody in the regions can get onboard. It must be simple, immune from the risk of climate change, and must not necessarily be new. I chose indigenous poultry keeping as a coping strategy because it meets the criteria and the huge demand for indigenous chicken in Tanzania.

The quantitative and qualitative data was used, collected by Norwegian Church Aid (NCA) staff, to test the possibility of introducing indigenous poultry keeping as a business to the people in Morogoro, Kilimanjaro, and Manyara regions Hai, Kilosa, Moshi rural and Babati rural districts. These districts are referred to as the study community in this research. From the whole study, 30 participants were screened that were involved in indigenous poultry keeping. The results showed that indigenous poultry keeping led to a positive impact on house construction and maintenance, assets, education, and the health of poultry keepers. The findings of this study were compared with other studies from Ghana, and it was revealed that the Tanzanian local poultry industry is better than that of Ghana. The reason for drawing this conclusion is that, unlike Tanzania, Ghanaian poultry farmers have been battling with their government through demonstrations and in the law courts to ban the importation of chicken products into Ghana, but the farmers have not succeeded on that cause. Also, chicken consumers in Tanzania of all walks of life patronize indigenous chicken irrespective of the season, whether processed or not, but in Ghana, the only period

when demand for indigenous chicken goes up is during important religious festivals such as Easter and Christmas. Lastly, whilst broiler production is very profitable in Tanzania, broiler production has collapsed in Ghana due to a lack of market for local chicken making poultry farmers concentrate on egg production.

The study recommended the following measures to boost the local poultry industry in Tanzania further: the poultry farmers must have health insurance, access to loans, reduction of interest rate on loans, formation of the co-operative union, free veterinary services, and community sensitization about the prospects of indigenous poultry business.

CHAPTER ONE

1. Introduction

Agriculture which comprises crop cultivation and livestock production, is an age-old activity across the globe. It is the backbone of most countries' national economy, contributing significantly to their Gross Domestic Product (GDP). In Tanzania, for instance, agriculture provides food for the estimated 42 million population and serves as a means of livelihood for over 80% of them directly working on the land (URT, 2013). It is the backbone of the economy of Tanzania, a source of food for the population, and contributes about 50% of the national income (MAFC, 2012; Oreku, Mtenzi and Ali, 2013). Agriculture again has been identified as the main economic activity for most people in the rural areas of Tanzania (MAFC, 2011). According to the Ministry of Agriculture, Livestock and Fisheries (MALF) (2017), Tanzania is an agricultural country where agricultural activities generate 70% of the total income for rural households. A very significant component of the agricultural industry in Tanzania is the livestock sub-sector.

According to TLMI (2015), as cited by MALF (2017), Tanzania is one of the countries in Africa with the largest livestock population. Basing its projections on two waves of surveys in 2010 and 2012, the MALF (2017) estimated that as of 2016, Tanzania had around 28.8 million cattle, 5 million sheep, 16.7 million goats, 71.4 million chickens, 1.99 million swine and 0.6 million donkeys which are distributed across the country's three zones. "The common livestock species in Tanzania are cattle, sheep, goat, swine, chicken and donkeys. Other species in the country include ducks, guinea pigs, turkeys, rabbits, camel and water buffalo which are considered less important to household income and food security as their numbers are fewer and held by fewer households" Table 1.0 below shows the national livestock numbers in Tanzania.

Table 1.0 National livestock numbers in Tanzania (MALF 2017)

Specie	National numbers (heads)
Chicken	71,418,048
Cattle	28,829,230
Sheep	5,012,098
Goat	16,672,786
Swine	1,988,826
Donkey	572,357
Others	4,539,665

A decade ago, the Government of Tanzania (GoT) recognized the importance and potential of the livestock sector for poverty alleviation, food security enhancement, employment creation, and environmental conservation. It, therefore, made a clear commitment for its improvement when it approved the National Livestock Policy (MALF 2017). The National Livestock Policy was ratified by the GoT in 2006, on the premise that 'the livestock industry has an important role to play in building a strong national economy and in the process, reducing inequalities among Tanzanians by increasing their incomes and employment opportunities' (URT 2006). The National Livestock Policy also recognizes that in addition to contributing to gross domestic product (GDP), the livestock sector has a role to play in ensuring food security; providing households with employment, income, and a store of value and investment opportunity; providing draught power and manure for sustainable agriculture; and fulfilling cultural roles (MALF 2017).

According to the National Panel Survey, 4.6 million households in Tanzania, 62 percent of which are rural and 32 percent urban own livestock, with the pattern of ownership being dominated by chickens (86%), goats (48%), cattle (35%), pigs (9%) and other livestock having 10 percent (MALF, 2017). The Ministry of Agriculture, Livestock and Fisheries again indicated that the number of households that own livestock is estimated at around 4.5 million, representing 45.3 percent of the total households in Tanzania. Table 1.1 below shows the actual number of households that own livestock across the different livestock production zones in Tanzania.

Table 1.2 Number of households that own livestock in Tanzania.

Dominant Livestock Farming	National	Central Zone	Coastal and Lake Zone	Highland Zone	Commercial
Cattle	1,484,569	507,914	526,144	450,643	53625
Sheep	24,195	9,193	12,427	2,575	NA
Goats	440,363	75,842	269,257	95,264	NA
Subtotal ruminants	1,949,126	592,949	807,799	548,482	53,625
Poultry	2,400,034	2,365,534			34,500
Swine	189,473	188,037			1436
Total	4,538,633	986,889	2,298,007	1,217,904	89,561

Source: MALF 2017

The most significant sub-sector of the livestock industry in Tanzania is the poultry sub-sector, particularly chicken. The term 'poultry' collectively is used to refer to domesticated birds, especially those that are valued for their meat and eggs, such as chickens, turkeys, ducks, geese, and guinea fowl. All over the world, chicken breeds make up the vast majority (63%) of all avian breeds, which ducks follow at 11%, geese at 9% and turkeys 5%. Indigenous or heritage breeds, however, make up most of the world's poultry genetic diversity (Pym, 2013). Poultry production is one of the most promising enterprises in the Tanzanian livestock sector because it requires little space and relatively small initial capital per unit head in comparison with other livestock enterprises. In addition, there is the availability of day-old chicks, poultry feeds and vaccines in the local Tanzania market (Mdomba, 2010). The Ministry of Agriculture, Livestock and Fisheries assert that most livestock-owning households in Tanzania obtain their highest income from chicken. As the graph in figure 1.0 shows, the dominant species in the household is chicken which contributes the highest income in 53 percent of livestock-owning households. This is followed by cattle with 33 percent and goat 10 percent livestock-owning households. Sheep are the least important species, which contributes 1 percent income in livestock-owning households.

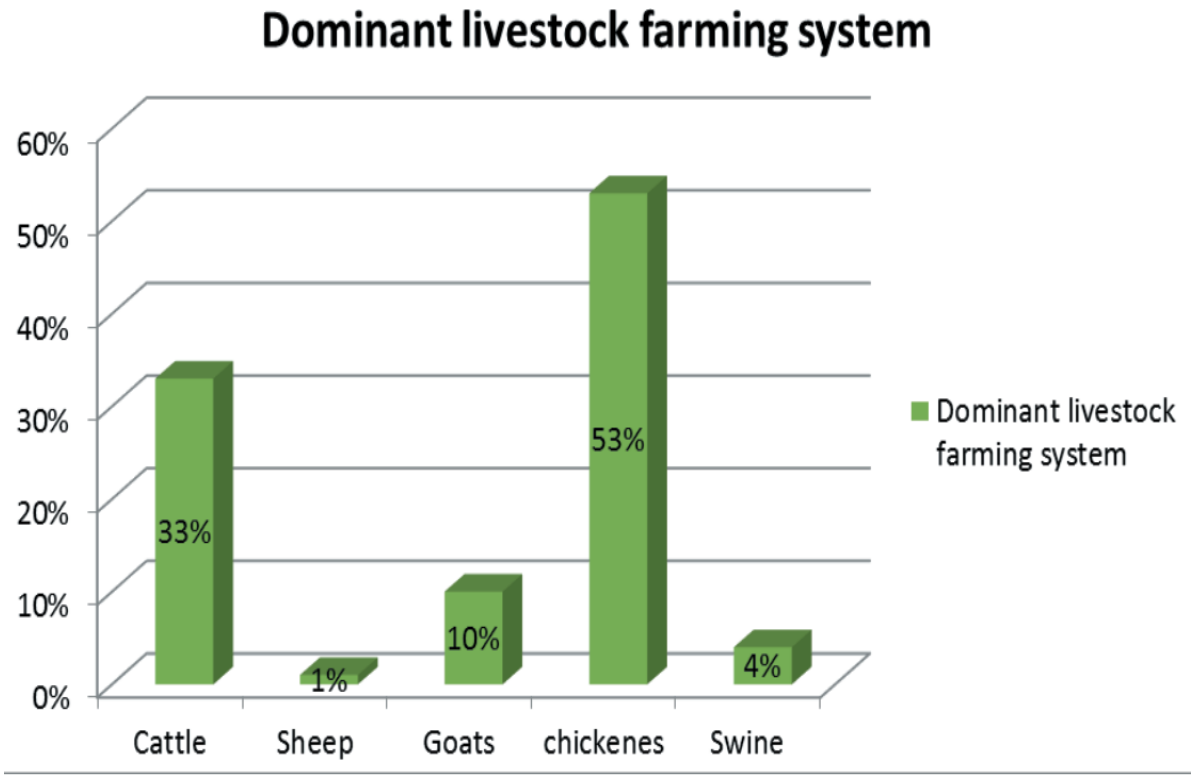


Figure 1.1: Dominant livestock species in Tanzania household income**.** Source: MALF 2017.

From the statistics, the poultry sub-sector is contributing significantly to the incomes of households in Tanzania. Therefore, this research seeks to assess how the sector is impacting the livelihoods of the people in the Hai, Kilosa, Moshi and Babati districts. The findings are expected to, among other things, encourage more people into keeping indigenous poultry to secure their livelihoods in the districts. This is in line with achieving the United Nations sustainable goal one which is intended to end poverty in all its forms everywhere[1].

2. Profile of study area

The figure below is an administrative map of Tanzania showing the regions and districts. The areas highlighted with yellow markings are the regions where the study took place. The regions are Kilimanjaro, Manyara and Morogoro region. Since the study was carried out in specific districts within the regions, those districts and their maps are further

[1] https://sdgs.un.org/goals/goal1

exhibited in this research. The specific districts are Hai, Kilosa, Moshi rural, and Babati rural districts.

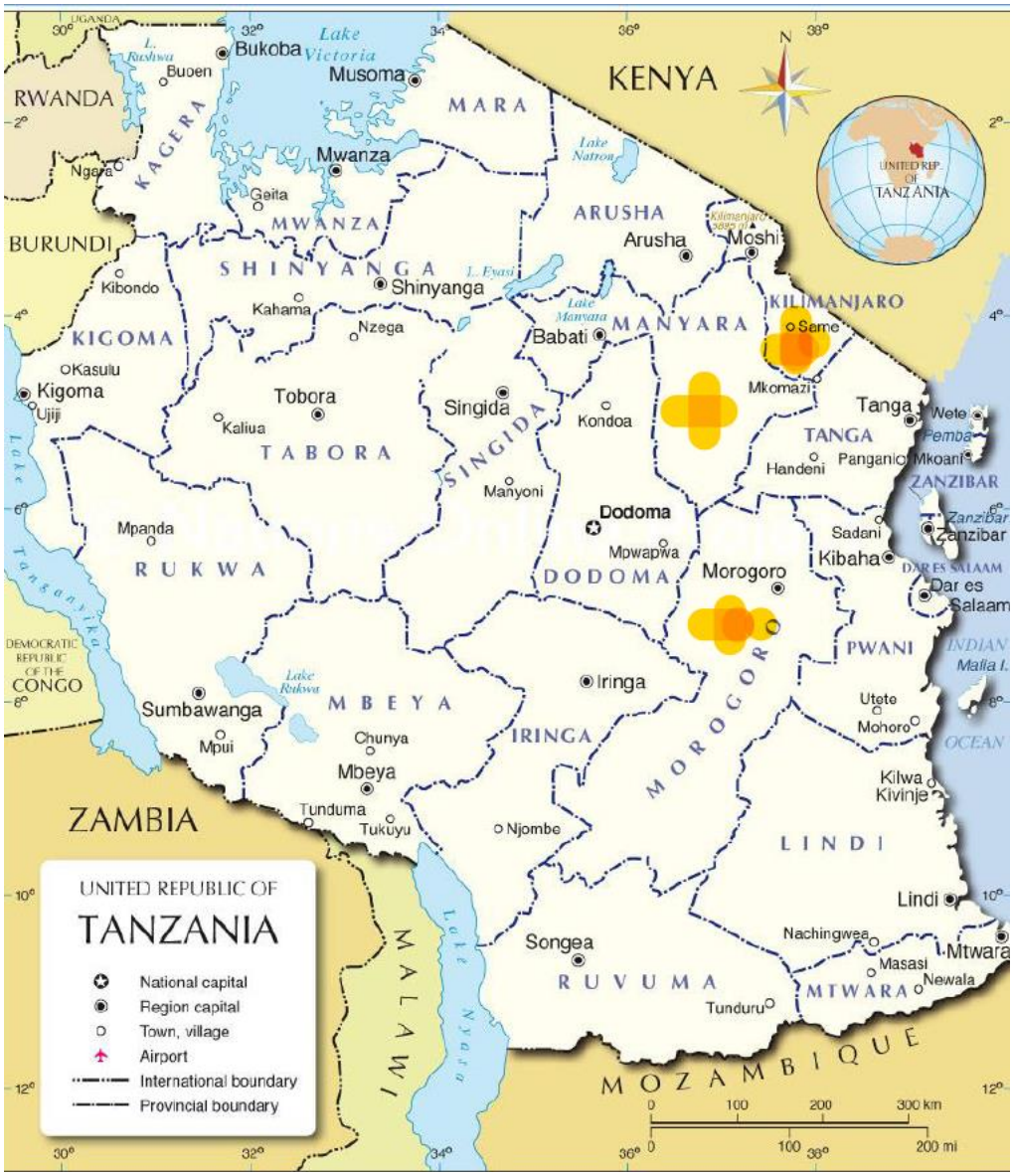


Figure 1.2: Administrative map of Tanzania showing regions and districts. (Source: One planet nations online)

2.1 Hai district

Hai District is geographically located in the northern part of Tanzania (latitude: 2˚50' - 3˚29'S, longitude 30˚30' - 37˚10'E). The District is one of the seven districts of the Kilimanjaro Region of Tanzania. It shares a border with Arusha in the southwest, Siha District in the west, Kenya in the north, and Moshi Rural and Rombo Districts.

Rainfall and temperature*:* The mean annual rainfall is 521 ± 188 mm (n = 40 years) and the mean annual temperature is 23.3˚C ± 0.66˚C (URT, 2012). According to the 2012 National Census, Hai district had a total population of 210,533, comprising 108,076 females and 102,457 males (URT, 2013). Hai district has a total of 14 wards. The rainfall pattern in the Hai district is bimodal with two rainy seasons, namely, the long rainy season, which starts in March and ends in June, and the short rainy season, which is usually between November and December (URT, 2012). This makes agriculture, mainly crop production and livestock rearing, the main economic activity of the people in the district. The figure below is the map of the Hai district.

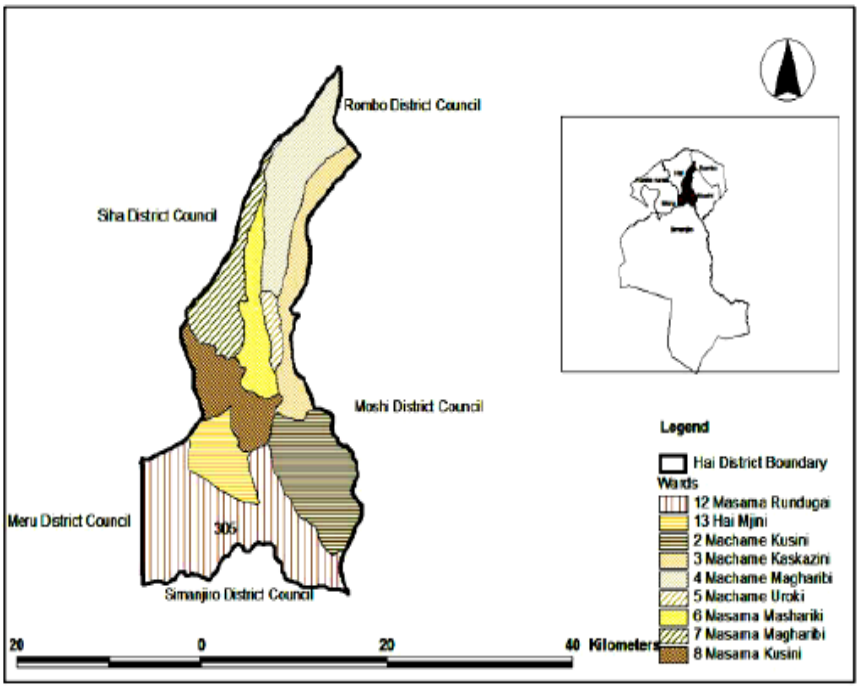


Figure 1.3: Administrative map of Hai district.[2]

2.2 Kilosa district.

Kilosa district is geographically located in the Morogoro Region of Tanzania. The District shares border in the north with the Manyara Region, in the northeast with the Tanga Region, in the east with Mvomero District, in the southeast with Morogoro Rural District, in

[2] https://www.researchgate.net/figure/Map-of-Hai-District-with-administrative-boundaries_fig1_276497523

the south with the Kilombero District, in the southwest with the Iringa Region and finally in the west by the Dodoma Region.

The 2012 National Census revealed that Kilosa district had a total population of 438,175 of which 219,797 were females and 218,278 were males (URT, 2013). The people in **Rainfall and temperature**: regarding climatic condition, Kilosa District is characterized by a semi-humid climate, receiving an average rainfall of 800 mm annually. Temperature ranges from 25°C and 28°C (Kilosa District Council, 2010). The people in the Kilosa district are farmers producing food crops and rearing livestock, particularly indigenous chicken. The district lies near Dar es Salaam, which is also a major metropolitan city in addition to being the former capital of Tanzania. Dar es Salaam has many agricultural service centres such as agro-chemical and veterinary shops, making agro-inputs and veterinary drugs easily accessible to poultry farmers. Also, the proximity of Kilosa District

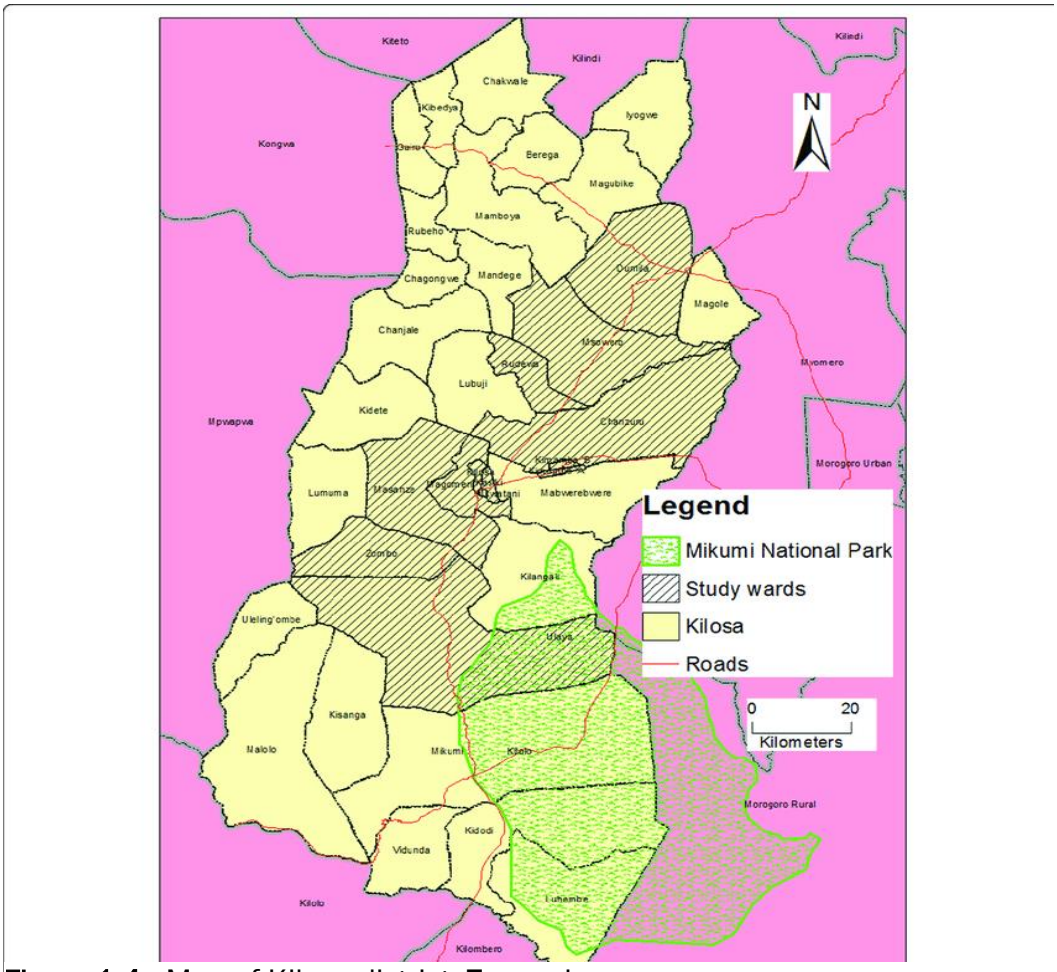


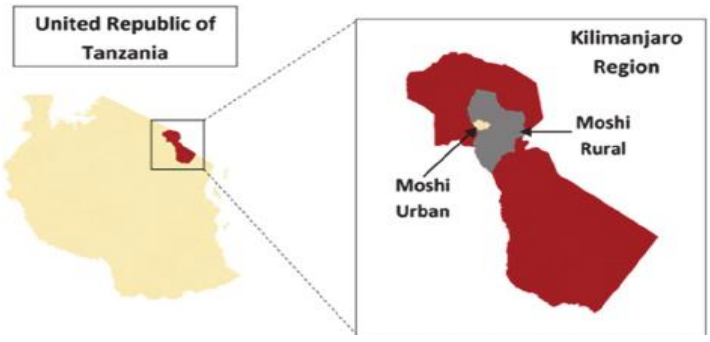
Figure 1.4: Map of Kilosa district, Tanzania

to Dar es Salaam makes the marketing of poultry products relatively more accessible due to goods roads, low transportation cost, and large market availability. Map of Kilosa[3]

2.3 Moshi rural district

Moshi rural district is one of the six districts in the Kilimanjaro Region of Tanzania. The district is geographically located on Latitude 3° 15′ S and Longitude 36° 45′ E. In terms of land size, the district covers an area of 1,713 square km, equivalent to 39 percent of the total area of the Kilimanjaro region. Moshi district is divided into 31 administrative wards (District Commissioner office, 2008). According to the 2012 national census, Moshi rural district has 466,737 with 240,970 females and 225,767 males. The district has a sex ratio of 94, and 4.2 average household size.

***Rainfall and temperature*:** The Kilimanjaro region in which the Moshi district is situated has typically two distinct rainfall seasons namely, November to December, and March to May rainfall seasons. Being part of the Kilimanjaro region, the Moshi district faces significant risks from climate change, with a rise in mean temperature, a decrease in annual precipitation, and the rainfall pattern increasingly becoming unimodal (Regional commissioner office, 1998). As farmers, this increased change in climatic conditions raises the level of vulnerability of the people in the Moshi rural district as they may have less water for crop cultivation. Therefore, the people in the district must have a coping strategy that would sustain their livelihoods against the risk of climate change. The figure below is a map of the Moshi rural district.



[3] . https://www.researchgate.net/figure/Map-of-Kilosa-district-showing-the-study-wards_fig1_309731788

Figure 1.5: Map of Moshi rural district, Tanzania[4]

2.4 Babati rural district

Babati rural district is one of the six districts of the Manyara region, Tanzania. There are 21 administrative wards in the district. According to the 2012 National Census, Babati rural district has a total population of 312,392 with 158,804 males and 153,588 females. The district has an average household size of 5.2, with a sex ratio of 103. The people in Babati rural district are farmers, so their livelihoods are equally threatened by climate change.

***Rainfall and temperature*:** Babati rural district experiences two rainy seasons between October and May, separated by a short dry spell (January–February). The rest of the year consists of a dry season [Strömquist and Johansson 1990; Kijazi and Reason 2009]. According to records from Babati meteorological station between 1973 and 2009, the area receives an average rainfall of 789 mm per year, with a standard deviation of 278 mm (Figure 2). Previous work suggests that Babati rural district is subject to significant regional inter-annual variations in rainfall due to the El Niño-Southern Oscillation (ENSO) as well as orographically induced precipitation in the highlands (ibid). Rainfall records in the district indicate that the topographic effect is 3.6 mm/year/100 m, explaining a relatively modest percentage (4%) of total rainy season precipitation between stations. The annual average temperature of the Babati rural district is 19.4 ◦C (Sandström 1995).

3. Background to the study

According to Match Maker Associates (MMA) (2018), the poultry sector in Tanzania is growing rapidly both in indigenous and exotic (broiler and layers) chicken. When given a choice, most Tanzanian chicken consumers prefer indigenous chicken meat and eggs because of the widely held belief that exotic chickens are susceptible to diseases and are therefore fed with a lot of medicine even days before they are slaughtered for marketing (ibid). The National Bureau of Statistics (NBS) (2018), per its estimation, stated that Tanzania had about 40 million indigenous chicken, with 38.6 million found in Tanzania mainland and 1.8 million in Zanzibar. The region with the highest number of indigenous

[4] https://www.researchgate.net/figure/Study-Setting-Map-showing-the-sampling-area-of-Moshi-Urban-and-Moshi-Rural-in- the_fig1_277634552

chickens is the Tabora Region which had 2.9 million birds, followed by Singida with 2.5 million birds, and Shinyanga at around 2.4 million birds.

Tanzania has two major indigenous poultry production systems: Traditional indigenous and improved family chicken systems (Da Silva et al., 2017). The traditional indigenous family system is an extensive scavenging dual-purpose system or local backyard system without biosecurity and producing low levels of egg (50 eggs/year) and meat (1.5 kg for mature chicken). The improved family chicken system (with improved local/imported tropical breeds), on the other hand, is a semi-intensive, semi-scavenging system with moderately high productivity (150 eggs/year and 1.8 kg live weight at maturity) with some attention to biosecurity (MMA 2018). MMA further states that Tanzania has been experiencing an increasing demand for indigenous chicken, leading to a corresponding increase in the number of incubators for local chicken from 14 in 2011 to 26 in 2015. There is an unmet demand for indigenous poultry meat in Tanzania and neighbouring countries in urban and rural areas. Indigenous chicken is a niche product preferred by local Tanzanians compared to exotic chicken or beef (ibid).

Indigenous chicken contributes over 60 percent of the total chicken population in Tanzania and supplies nearly all poultry meat and eggs consumed in the rural areas and 20% of same in the urban areas. Despite these seemingly impressive statistics, the potential of the indigenous poultry industry in Tanzania is largely untapped (ibid).

According to employment estimates released by the NBS in 2018 from the Integrated Labour Force Survey-2006 and 2014, “the number of persons in employment has increased from 20.0 million in 2014 to 22.0 million in 2018”. The employment estimates again revealed that the unemployment rate in Tanzania had been positively decreasing from 10.3 percent in 2014 to 9.7 percent in 2018. The results from the data further revealed that the private sector (including agriculture) has been the main driver of the Tanzanian economy representing 96.5 percent of total employment in 2014 with almost the same percentage of employment in 2018 (95.7 percent). However, agriculture's share in agriculture decreased from 66.9 percent in 2014 to 63.0 percent in 2018.

The employment statistics released by the NBS on the Tanzanian economy appears encouraging despite a decrease in the agriculture percentage. As the potential for indigenous poultry keeping has been described as largely untapped by researchers, attention must be focused on that sector so that agriculture would also begin to see an

increase in the share of employment percentage. This research is grounded on that reason. The research aims to assess how indigenous poultry keeping is promoting secured livelihood for smallholder poultry farmers in Hai, Kilosa, Moshi and Babati district of Tanzania. This is important because it is hoped that the findings would encourage local Tanzanians to venture into indigenous poultry production which would go a long way to improve themselves and the Tanzanian economy. According to Alan (1997), in Bangladesh, the share of poultry in the animal protein of human diet increased from 14 percent in 1977 to 23 percent in 1987 but despite poultry production making a significant economic contribution in East Africa at both national and household levels, the contribution is not captured in government economic data. It is expected that the findings of this research would also enable the Tanzanian government to formulate appropriate policies to attract more people into indigenous poultry keeping. Despite the potential of village chicken in improving poor people's income and nutrition, researchers have relatively neglected the development of community nutrition (Sonaiya et al., 1999; Gue`ye, 2000; Udo, 2002). It is again expected that this research would serve as a pivot for more research to be conducted in the indigenous poultry industry in Tanzania.

4. Research questions

The following research questions were used in this research:

1. To what extent has indigenous poultry keeping promoted secured livelihoods for smallholder poultry keepers in Hai, Kilosa, Moshi and Babati districts?
2. What is the impact of indigenous poultry keeping on house construction or maintenance in the study community?
3. What is the impact of indigenous poultry keeping on the assets of the smallholder poultry farmers in the study community?
4. What is the impact of poultry keeping on the education of smallholder poultry farmers in the study community?
5. What is the impact of indigenous poultry keeping on the health of poultry keepers in the study community?
6. What are the market linkages between indigenous poultry and non-poultry farmers?

5. Statement of the problem

Since the 19790s, global poultry meat production, consumption and trade have grown faster than any other meat. During the 1970s, when the growth in demand for other meats, including fish, slowed, demand for poultry meat accelerated, and poultry production continued to expand the meat trade (Barbut, 2002). According to Sonaiya (1993), poultry production in Africa is mainly based on indigenous chickens' scavenging found in almost all villages and households in rural Africa. Despite being characterized by low output, the indigenous poultry sector, over 70 percent of the poultry product and 20 percent of animal protein intake in most African countries come from the indigenous poultry sector. This that an increase in poultry production would positively impact household food security through improved diet and income generation. (Adei and Asante, 2012).

According to Adei and Asante (2012, poultry production has a long-standing history in agricultural development and the quest for increased nutritional value. However, not much emphasis has been put on that sector. Referring to Ghana, Flake and Ashitey (2008) noted that during the 1980s and 1990s, the poultry industry in Ghana grew rapidly into a vibrant agricultural sector that supplied about 95 percent of chicken meat and eggs in the country. The growth in the local poultry industry was due to the government of Ghana's initiative to promote commercial poultry production as the greatest potential for addressing the acute shortfall in the supply of animal protein. There were initial setbacks due to the irregular supply of imported day-old chicks and other inputs and frequent outbreaks of diseases that discouraged potential farmers. The government of Ghana overcame those setbacks by removing customs duties on poultry inputs such as feed additives, drugs and vaccines, and access to veterinary services provided by both government agencies and private practitioners. Those measures the government put in place yielded the results the country witnessed in the 1990s.

However, Khor (2006) asserted that in the 1980s and 1990s, because of the debt default situation, most developing countries, including Ghana, had to agree to implement World Bank and International Monetary Fund (IMF)'s "structural adjustment policies" which harmed the rural communities where the bulk of small-scale farmers are based. Referring to the 1980s where Ghana began its aggressive trade liberalization policies in compliance with policy prescriptions of the Bretton Woods institutions, Aning (2006) stated that towards the end of the decade, a change in Government policy resulting in trade liberalization (and the influx of cheaper poultry meat products) and the re-imposition of

taxes and duties on imported inputs for the poultry industry caused a severe decline of the poultry industry in Ghana. According to ISODEC (2004), Ghana imported about 40,000 metric tonnes of chicken product in 2002. In contrast, the domestic poultry sector, which was able to supply Ghana's poultry requirements in 1992 only provided a dismal 11 percent by 2002 (Adei and Asante 2012). Kudzodzi (2008), in his research into the poultry industry over the same period, further indicated that the annual poultry import bill in 2005 was about thirty million dollars. SEND-Ghana estimated that, as of 2008, the share of the domestic poultry industry in the total amount of poultry consumed in Ghana was as low as 5 percent (SEND-Ghana, 2008).

Refreshingly, Tanzania is not facing huge importation of chicken like Ghana because, as researchers have explained previously, Tanzanians prefer their local chicken more than the imported ones. However good this might look, Tanzania could become just like Ghana if serious attention is not given to the indigenous poultry industry. The Tanzanian government's policies to sustain the domestic poultry industry shall be explored in this research.

Secondly and most importantly for this research, the people in Hai, Kilosa, Moshi and Babati rural districts depend on rainwater for their crop cultivation. These districts are situated in Morogoro, Kilimanjaro and Manyara regions. Kilimanjaro region (and the whole of Tanzania) faces significant risks from climate change, with a rise in mean temperature, a decrease in annual precipitation, and the increasingly unimodal rainfall pattern (Regional commissioner office, 1998). As farmers, this increased change in climatic conditions raises the vulnerability of the people in the study community as they may have less water for crop cultivation. Therefore, the people in these districts must have a coping strategy that would sustain their livelihoods against the risk of climate change.

A better coping strategy must be one that can withstand the rapid change in climatic conditions. It must not require huge capital before the people can engage in it. It must also be simple that allows people with little or no formal education to take part. This better coping strategy for me is indigenous poultry keeping which many experts and researchers have confirmed that it possesses huge untapped potential in Tanzania. Besides crop cultivation, the people in the study community also real animals, including indigenous chicken. Therefore, getting the people to take indigenous poultry keeping as a business would not present any huge problem. What is needed for me is to show the people how indigenous poultry keeping as a business has been able to transform the livelihoods of

people who live in the same community with them. These research findings would be used to encourage the people in the study community to take indigenous poultry keeping as a business that would sustain their livelihoods against the increasing change of climatic conditions threatening their current livelihoods.

The findings can also be used to persuade government and non-governmental organizations (NGOs) to invest in indigenous poultry keeping in the study community and other communities in Tanzania as a poverty alleviation drive. Because as DFID (1999) noted, understanding livelihood outcomes is necessary to alleviate poverty.

6. Significance of the study

Researchers have identified indigenous poultry keeping as having huge untapped potential in Tanzania. The reason researchers assign for this untapped potential is because Tanzanians believe local chicken is healthier than exotic chicken, which sometimes, when they are sick, they are given medicine even a few days before they are slaughtered for the market. As a result of this negative belief about exotic chicken, there is always a ready market for indigenous chicken in Tanzania, both in rural and urban areas. This research is intended to create awareness in the Hai, Kilosa, Moshi and Babati rural districts of Tanzania about the huge potential of keeping indigenous chicken in the districts. This would, among other things, help in creating employment and alleviate poverty in the districts. The research is also expected to make a scholarly contribution by serving as a reference for other researchers who might be interested in studying the relationship between indigenous poultry keeping and livelihood security in other regions of Tanzania.

7. Objective of the study

This study aimed to assess how indigenous poultry keeping promotes secured livelihoods for smallholder poultry keepers in Hai, Kilosa, Moshi and Babati rural districts of Tanzania. The study looks at how indigenous poultry keeping has led to the construction or maintenance of houses, acquisition of assets, healthcare, market linkages, and education of poultry keepers in the study community. This is so important because assets can easily be turned into money which can enable a person to get food, assess healthcare, education, etc.

The study also aims to prove that indigenous poultry keeping is a profitable venture in the study community so that more people can be attracted to the indigenous poultry business.

This is in line with promoting sustainable livelihood activities to alleviate poverty among vulnerable groups.

CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

1. Introduction

This chapter is about the literature review and the conceptual framework. Under the literature review, I used existing literature that has been written on poultry production across the globe, mainly from academic journals, state institutions, international organizations (both governmental and NGOs), and the media. Some of the literature reviewed discussed the benefits of the poultry industry and poultry production systems.

According to Niehof and Price (2001), "a sustainable livelihood is also a secure livelihood". Therefore, in this thesis, I used sustainable livelihood and secured livelihood interchangeably. Niehof and Price again have argued that livestock can either be a resource or an assent depending on its usage. In this thesis, chicken is treated as a resource that indigenous poultry keepers in the study community use to acquire other assets to secure their livelihoods. Other concepts which are used in the thesis have been explained in the remaining paragraphs of the conceptual framework below.

Many researchers have identified the considerable importance of poultry keeping to human society as the reason why the activity has been one of the oldest human activities on the planet earth. Watt (2010) asserted that poultry keeping is one of the most popular livestock enterprises in the world today. According to Alders (2004), archaeological evidence has proven that domesticated chickens existed in China eight thousand years ago. Global poultry meat and eggs production estimates in the year 2009 stood at 92 million metric tons and 62 million metric tons, making poultry birds one of the most important farm animals in the world (Watt, 2010). Chicken can be categorized into three types: broilers for meat production, layers for egg production, and the dual-purpose type raised for both meat and eggs. The village poultry production system falls into type three and can be found in all developing countries, playing a very significant role in many poor rural households (Alexander, 2004). According to Copland (2005), the village poultry production system is widespread in most African and Asian countries because it is a very flexible livestock-production system. The village poultry production system is a traditional family-based extensive poultry production system. Eighty percent of the poultry population can be found in the conventional family-based poultry production system, contributing up to ninety percent of poultry products in some countries and twenty percent of protein consumption in developing countries (Boki, 2000).

Researchers have identified the provision of protein to the human population by poultry birds as some of the many benefits society get from keeping poultry. Among the researchers who have made this type of assertion include Omonoma and Oni (2004), and Barbut (2002), who asserted that one way to increase protein supply for humans rapidly is through poultry production. Appiah (1993) also asserted that poultry products which are a cheaper and more acceptable source of animal protein, have decreased the purchase of red meat, which is more costly and beyond the purchasing power of the average citizens. Therefore, it means that poultry production can be one of the surest ways of addressing protein deficiency which happens to be one of the most destructive diseases affecting children (Aboe et al., 2006). Ensminger (1986) asserted that chicken protein content ranges from 22-25 grams per 100 grams portion depending on the parts being considered) to put it more succinctly. The consumption of chicken products is rapidly becoming significant in Africa (Shane, 2006; Killebrew and Plotnick, 2010) because chicken products are a relatively cheaper source of enriched protein (Kwadzo et al., 2013).

According to Naazie and Canacoo (2007), poultry is a significant source of food, income, employment, and socio-cultural values. Izunobi (2002), in cataloguing the prospects in poultry production, noted that the importance of poultry production includes the provision of food, income, employment, industrial raw materials, and manure for crop production. Jordan and Pattison (1996) also indicated that the economic significance of poultry varies considerably from meat and eggs to income or foreign exchange. By comparing poultry production with livestock, Obi and Sonaiya (1995) emphasized that poultry has a short generation interval compared to other livestock. This short generation interval of poultry production makes Gillespie (1983) conclude that poultry's income is spread throughout the year. Gueye (2005) considered the gender aspect of the benefits of poultry production by saying that poultry provides additional revenue to the general resources of the poor farmers, especially women.

The importance of chickens again may be seen in the vital role it plays in many poor rural households by serving as an essential source of high-quality nutrition and income at a minimal cost. It is a renewable asset that may be used for pest control, for providing manure and for their role in social activities, religious ceremonies, and traditional treatment of illnesses. Households also keep chickens to serve as a source of quick money to pay for medicine, food, transportation, or school fees. Very importantly, chickens are small enough to be consumed quickly by a family, unlike larger livestock that may spoil

when smaller families slaughter them without refrigerators (USAID, 2009). Still on the importance of poultry keeping, Mtambo (2005) asserted that poultry has a high potential for poverty alleviation and wealth creation in the rural areas where pre-capital income is lowest. According to FAO (2001), poultry production in Tanzania together with other small livestock contributes to about 5.4 percent of the total GDP of households, and there were thirty million indigenous chicken which supplied hundred percent of the poultry meat and eggs in rural areas as well as 20 percent of the poultry meat and eggs in urban areas. The FAO further asserted that all the birds were kept by smallholder farmers who had flock sizes ranging from 10-30 birds per household. The claim is often made that if the poor can acquire poultry, it would enable them to move out of poverty (Dolberg, 2001; Dossa et al., 2003; Kristjanson et al., 2004; Peacock, 2005; Holmann et al., 2005). Boki (2000) asserted that traditional poultry, especially the scavenging local chicken, is strong and has addressed many important issues such as increased household income, increased capital flow, absence of adverse environmental impact, and increased household food security, gender sensitivity and provision of high-quality nutrition. The Ministry of Agriculture Food-Security and Co-operatives (MAFC) cited by Ndomba (2010), noted that poultry production in Tanzania is mainly carried out in the small-scale village or backyard poultry system (local chicken production system), and that supplies most of the poultry meat and eggs consumed in rural areas and about 20 percent of what is consumed in the urban areas. Before MAFC released it statistics on the local poultry production, the Food and Agricultural Organization of the United Nations (FAO, 2001) had indicated that poultry production and other livestock contribute 5.4 percent to the Gross Domestic Product (GDP) of Tanzania which had 30 million indigenous chicken supplying 100 percent of the poultry meat and eggs in rural areas and 20 percent of poultry meat consumed in the urban areas.

The benefits of chicken to households in developing countries is more diverse. In the tropics, the use of native chicken varies from region to region and from community to community within a region. Small land holders keep chickens in the tropics for their socio-religious function because the assessment of the commitment of an individual or community to a particular spiritual being, deity, season, and the traditional and or religious festival is done by the quality of the offering that satisfies special morphological features of the chicken handed by the receiver (Dessie et al., 2011). Indigenous poultry in the tropics can survive and produce with an irregular supply of feed, water, and minimum healthcare regardless of its low output. It serves as a source of high-quality animal protein and provides emergency cash income and plays a significant role in the socio-cultural life

of the rural community. Even though they are slow growers and poor layers of small-sized eggs, they are known for being good mothers and sitters (Tadelle, 2003). Other qualities of indigenous chicken include being excellent foragers, being hardy (45), and natural immunity against common diseases (Mtambo, 2000; Dessie 2011). According to Dessie et al. (2011), a very important characteristic of the native chicken is its hardiness, enabling it to tolerate the harsh tropical and sub-tropical environmental conditions under poor husbandry practices (i. e; feeding, watering, and handling) without any much loss in production.

Family poultry margins in Haiti represent 7.3, 3.2 and 2.2 percent of non-food, food, and total household expenditure, respectively, which is well above the expenditure of those not involved in family poultry (Nchinda et al. (2011). Das et al. (50) asserted that in Bangladesh, rural poultry production, particularly chicken and ducks play a very important role in the socio-economic development of the people. The researchers noted that about 90 percent of all rural households in Bangladesh keep some small number of indigenous chickens maintained by women and children under free-range semi-scavenging systems, generating cash revenue and supplying adequate eggs meat to their family diet. Alan (1997) 51 noted that a study report in different rural communities in Bangladesh on Small Holder Livestock Development Project (SLDP) showed that the general socio-economic conditions of the beneficiaries of the project, their egg and meat consumption, women empowerment in decision making issues as well as employment opportunities increased quite significantly after the intervention of the SLDP.

Conceptual framework

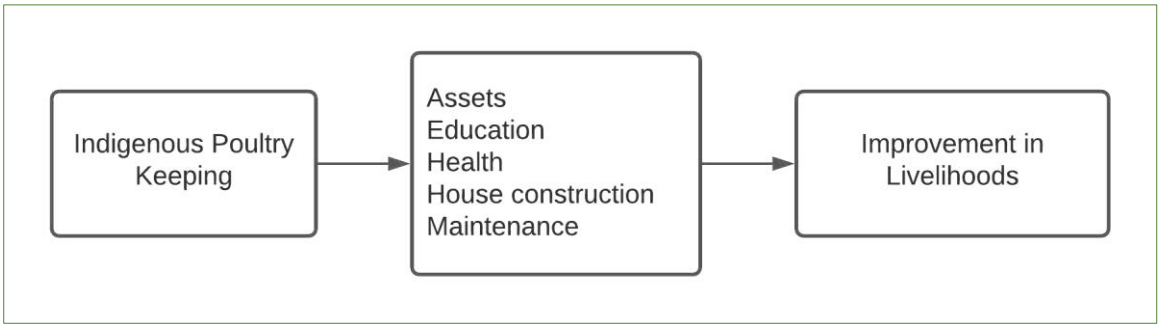


Figure 2.0. Relationship between indigenous poultry keeping and livelihoods improvements.

Figure 2.0 above is a flow chart explaining the relationship between indigenous poultry keeping, assets, education, health, and house construction and maintenance leading to the security of livelihoods. As I explain further down below, indigenous poultry is a resource that leads to the acquisition of assets, education, good health, house construction and maintenance, which secures the livelihoods of poultry keepers of Hai, Kilosa Moshi and Babati rural districts.

According to Chambers and Conway (1992), livelihood is "the capabilities, assets (including both material and social resources) and activities required for a means of living". Livelihoods are "the way people combine their capabilities, skills and knowledge with the assets at their disposal to create activities that will enable them to make a living" (Ireland, 2004). Chambers (1989: 7) also defines livelihood as "adequate stocks and flows of food and cash to meet basic needs". To Niehof and Price (2001), livelihood is the "the material means whereby one lives".

In all the definitions quoted above, the common denominator is the means of living. In other words, livelihoods are the means (i.e., the material things) that enable humans to live. Following from those definitions of livelihoods, therefore, an improvement in the material means whereby humans live is an improvement of livelihoods. A very important prerequisite of livelihood improvement is the availability of resources and assets. Resources "can be seen as the immediate means needed for livelihood generation (Niehof and Price, 2001). Swift (1989), as cited by Niehof and Price (2001), define assets as "a wide range of tangible and intangible stores of value or claims to assistance". "In other words, assets can be converted into resource when necessary, in day to day living as well as in a situation of crisis" (Niehof and Price, 2001). Based on Niehof and Price's assertion, a single material may either be used as a resource or an asset depending on how individuals or groups are using the material to improve their livelihoods. For example, livestock can be a resource or an asset depending on its usage. Engberg (1990) distinguishes several types of resources, but the kind that fits this research is material resources. For Engberg, examples of material resources include land, money, livestock, agricultural tools etc. I use chicken in this research to acquire other assets to improve the livelihoods of the people of the Hai and Kilosa districts.

An essential element in the discussion of livelihoods is sustainability and vulnerability. According to Chambers (1989), in the context of livelihood, sustainability has to do with maintaining and improving livelihoods while maintaining or enhancing the assets and

capabilities on which livelihoods depend. On the other hand, vulnerability is not having enough assets and creating or maintaining them (Swift 1989). Based on the descriptions of Chambers and Swift, therefore, Niehof and Price (2001) asserted that "sustainable livelihoods are those that can avoid or resist stress and shocks and can bounce back when affected, while vulnerable livelihoods cannot cope with stress and shocks without being damaged". For sustainable livelihoods not to degenerate into vulnerable livelihoods, coping strategies are needed. Copy strategies aim to deal with recurrent, hence foreseeable, situations of stress (Niehof and Price, 2001). An effective coping strategy is a sustainable strategy. Sustainable strategies can be defined as the ability to maintain and enhance assets (Chambers, 1989) or the capacity to recover (or replace, one might say) resources (Wheatley, 1998). Assets are very crucial in the promotion of secured livelihoods. According to Ellis (2000), assets are the cornerstone in understanding the options available to the poor, the strategies they can adopt to attain their livelihoods, the outcomes they aspire to and the vulnerability context under which they operate. The lack of assets hampers the capacity to design and implement effective coping strategies and therefore pushing households into the category of households with highly vulnerable livelihoods in the end (Niehof and Price, 2001).

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

This chapter focuses on the methodology employed for the collection and analysis of data in this thesis. According to Bryman (2012), a research design provides a framework for collecting and analysing data. The research design informs the researcher about the appropriate methodology to use for gathering data. A research method, therefore, is simply a technique for collecting data (Bryman, 2012). The data for this research was collected by NCA field staff, and later on, the analysis done at NMBU with specific attention to the poultry farmers' livelihoods.

The Consultants requested NCA to make prior data collection arrangements with selected respondents, including securing the venues for group discussions, field transport and other logistics. The consultants collected both qualitative (gathering in-depth information from interviews and focus groups) and quantitative (numerical information). The in-depth interview was conducted with key informants, i.e., NCA working partners, market specialist, artisans who make the quality and affordable chicken houses, feeds processors, day-old chick suppliers (Silverlands), VICOBA representatives, government stakeholders (extension officers, village leaders and dispensaries/health centre representatives). The semi-structured questionnaires were administered to individual poultry keepers where information related to production and marketing could be obtained. For this particular study, the only data relevant to poultry farmers' livelihoods were used.

The field work was conducted in Morogoro, Kilimanjaro and Manyara regions, specifically in Kilosa, Hai, Moshi rural and Babati rural districts from 11th to 24th July 2019 and January 2021. NCA Program officer communicated with partners who identified the respondents to be interviewed in each district. The prerequisites of poultry keepers to be included in the sample were given prior by the consultants. For impacts assessment, the consultants preferred poultry keepers who had already sold the products at least once. The consultants used voice recording devices to assist in capturing the qualitative information. The social science data collection techniques were applied where the triangulation method was used, and sensitive questions were asked using follow-up questions. The consultants abided by all research ethics as required. They collected only the intended information for the consultancy assignment and considered the respondents' consent before soliciting the required information from them. Moreover, to enhance confidentiality, the team signed the confidentiality agreement with NCA designated staff to certify that they will not disclose NCA information to any organization or competitor.

Figure 3.1 shows the number of poultry keepers interviewed and their locations. The figure shows that most poultry keepers were from Dumila and Magole villages in Kilosa district because the poultry keepers assembled at one point (Dumila Kilosa) in contrast with Moshi district where the consultants visited poultry keepers in their localities.

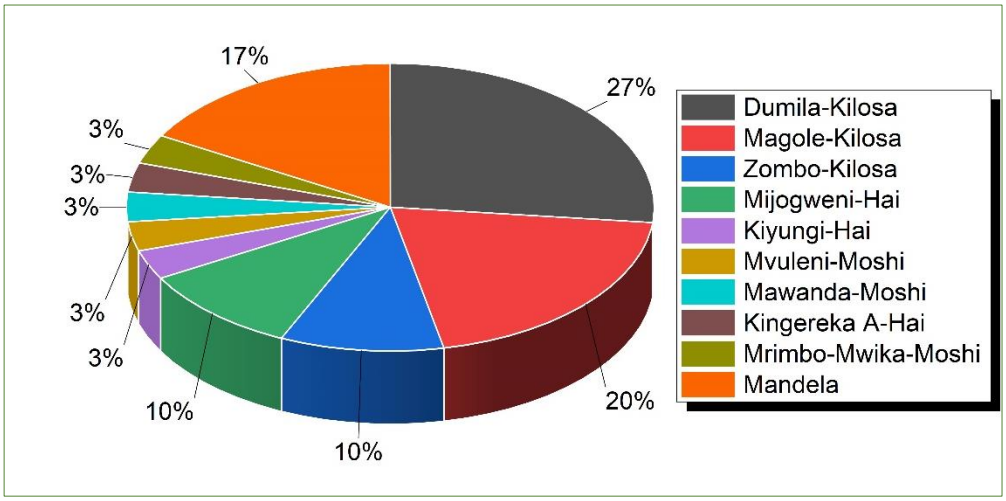


Figure 3.1: Poultry keepers' survey locations

1. **Data screening, coding and analysis**

At the end of each day, each questionnaire/checklist was checked if the data were entered correctly. If there were missing data, the consultants requested respondents to clarify or to correct data using the mobile phone. Then the information was coded and entered into excel sheets and SPSS software. Afterwards, data were analyzed to allow the analysis of cost structures for poultry. Moreover, calculation of payback period, the rate of return, revenue, cash inflow, net and gross profit margins for each investment was analyzed using excel sheet while impacts variables which are descriptive were analyzed using SPSSS software.

2. **Limitations and challenges during data collection**

During data collection, there was the mourning of Rev. Aminirabi Swai, the head of Lutheran Church Hai diocese. He died on 11th July 2019, which was the first day of data collection. This affected much data collection in the Kilimanjaro region-both in Moshi rural and Hai district because the poultry keepers in the two districts attended his mourning and

funeral. The field staff strived to work many hours and managed to reach 30 active individual poultry keepers who had already realized the impacts in Kilimanjaro, Manyara and Morogoro regions. According to Walonick (2010), a sample size of 30 respondents is convenient for making the statistical analysis. KoBo software (KoBoToolbox at the Harvard Humanitarian Initiative, 14 Story St, Second floor, Cambridge, MA 02138) was used during the data collection in 2019. Due to the COVID-19 pandemic in Tanzania, the data collected in January 2021 was based on a "paper-based" survey in the study districts that were later scanned and data was imported into an excel data sheet.

Secondly, it can be seen from the table in the table below which shows the number of poultry keepers interviewed and their locations that the poultry keepers were more scattered. Since the poultry keepers were more scattered, much time was used in travelling.

Table 3.1: Demographic and other information of poultry keepers

Variables	Sex of the respondents				Total %	
	Male		Female		N	%
	N	%	N	%		
Educational Level						
At least Primary Education	7	23.3	15	50	22	75.3
At least Secondary Education	2	6.7	5	16.7	7	23.4
Tertiary Education	1	3.3	0	0	1	3.3
Total	**10**	**33.3**	**20**	**66.7**	**30**	**100**
Marital status						
Single	1	3.3	3	10	4	13.3
Married	9	30	14	46.7	23	76.7
Divorced /Separated	0	0.0	2	6.7	2	6.7
Widow/widower	0	0.0	1	3.3	1	3.3
Total	**10**	**33.3**	**20**	**66.7**	**30**	**100**
Age group						
18 to 35 years	2	6.7	8	26.7	10	33.4
36 to 45 years	3	10	8	26.7	11	36.7
46 to 60 years	3	10	3	10	6	20
>60 years	2	6.7	1	3.3	3	10
Total	**10**	**33.4**	**19**	**66.7**	**30**	**100**
Experience in the project						
1 to 12 months	5	16.7	9	30	14	46.7
13 to 24 months	4	13.3	9	30	13	43.3
25 to 36 months	1	3.3	2	6.7	3	10
Total	**10**	**33.3**	**20**	**66.7**	**30**	**100**

Comparison between poultry and non-poultry farmers in terms of demographic features

Figure 3.2 shows a comparison between poultry and non-poultry farmers. From the figure, it could be seen that there was no marked difference in demographic features between poultry and non-poultry farmers in the study community. However, even though both had the same features, poultry farmers/keepers had superior numbers.

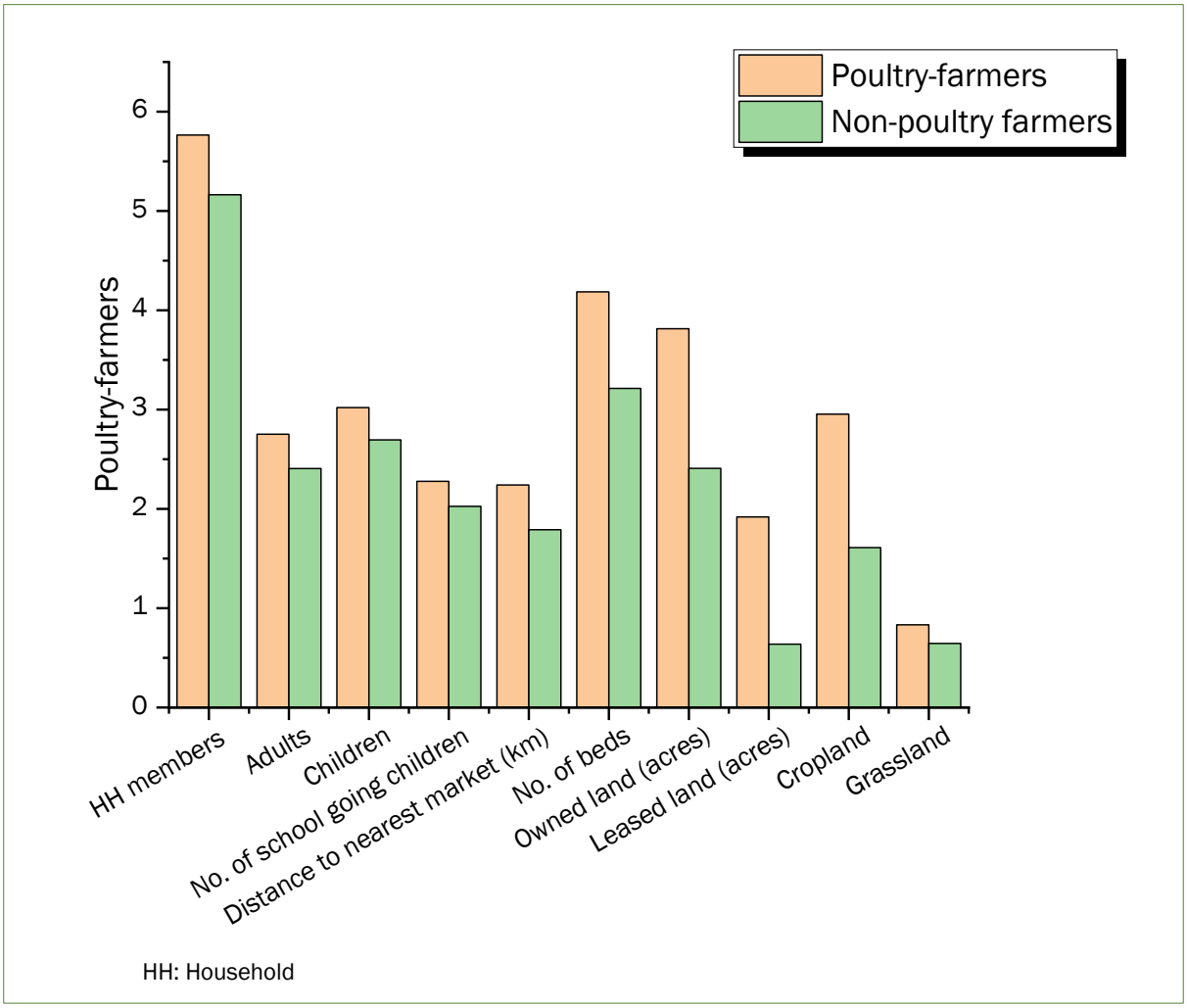


Figure 3.2: A comparison of demographical features of poultry and non-poultry farmers in the study community in Tanzania

CHAPTER FOUR: FINDINGS AND DISCUSSIONS

This chapter presents how indigenous poultry keeping is promoting secured livelihoods for people living in Hai, Kilosa, Moshi and Babati rural districts of Tanzania. Since livelihood is a broad concept encompassing many aspects, I decided to focus on the acquisition of assets, house construction and maintenance, health, and education. In other words, the research sought to find out how indigenous poultry keeping leads to the acquisition of assets, house construction and maintenance, health, and education, which altogether give the poultry keepers in Hai, Kilosa, Moshi and Babati rural districts secured livelihoods.

1. Demographic and educational information of respondents

The majority of the poultry keepers interviewed were female (73.3%) as compared to male. 27% of the poultry keepers were aged between 18 and 35 years. The data also reveals that male youths were 2% while female youths were 25%. The findings indicate that women are at the forefront of poultry keeping in the study community. Undeniably, ownership of poultry project is almost entirely in the hands of women and serves as a source of cash income for the poor rural families, particularly for women (Alam, 1997). The high percentage for females is also because the poultry production activities are done in the backyard in a home environment where a woman can keep the eyes easily while taking other household's responsibilities. The data in the study community is consistent with the national data on women participation in agriculture in Tanzania. According to the World Bank (2007), whereas both men and women play substantial roles in Tanzania's economy, women are more active in agriculture than men. Women are slightly in the majority in agriculture (52 percent versus 48 percent (ibid).

The importance of female employment cannot be overemphasized. Female work has implications for the welfare and education of children, and as a housewife, because incomes are often not pooled within households. Women are responsible for purchasing food, and household goods, any increase in revenue earned by women leads to higher household expenditure on food and education (World Bank 2007). This important relationship has been empirically demonstrated by Thomas (1990) and Haddad et al. (1994). The former Secretary-General of the United Nations, Kofi Anan said, "Eliminating gender discrimination and empowering women are among the paramount challenges facing the world today. When women are healthy, educated and free to take the opportunities life affords them, children thrive and countries flourish, reaping a double dividend for women and children" (UNICEF 2007). The International Labour Organization

(ILO) asserted that in Tanzania, women's employment had been found to reduce child labour because the income earned by women can offset the small amounts of supplemental income generated by children (ILO 2001). According to the 2012 national census of Tanzania, the female population (23,058,933) was higher than males (21,869,990). Therefore, having more females, especially at their productive ages participating in the poultry keeping business is crucial for the national economy and women empowerment. This was precisely confirmed by Esther Mohamed during a focus group discussion at Kiyunga Darajani when she responded: *"Speaking the truth that before this project, I had nothing worthy to do, but now I thank God and I am happy that I have something to do here at home. Due to the sickness condition of my mother, I could not go away and leave her for a long time. But since I started this project, I can now take care of both my poultry and my mother".*

Another confirmation came from Agnes Majole from Dumila, who succinctly said, *"I like this project because I can actively feed my chickens while I am continuing with my routine domestic chores as a housewife. It also helps me to move out of poverty from one to the next level. I like this project!"*

The data further revealed that 10% of the study participants were above 60 years. As the Nobel Prize winner Joseph Stiglitz once said, "There is no subject of greater importance than the ageing of the population and the provision of social protection for older people. It affects the very nature of our societies and concerns not only the older people but all sections of the population" (taken from Spitzer and Mabeyo 2011). The global demographic statistics show that the world population aged 60 years and above is increasing enormously. In most African countries, an almost unnoticed but dramatic demographic change will occur in the following decades. In some countries, the older population will increase six-fold by 2050 (Spitzer et al. 2009). For Tanzania, population estimates assume that the absolute number of older persons will increase from 1.95 million in 2005 to 7.16 million in 2050. This equals an increase of 270 %. The percentage of older people in the population of Tanzania is currently the highest in the East African sub-region (5.1 % in 2005), which will increase up to 10.7 % in 2050 (Aboderin & Gachuhi 2007; United Nations Population Division 2007). However, in most African countries, these demographic projections fail to correspond with the plans and existing programs to address the needs of older people. Consequently, most older people continue to live at risk in the face of abject poverty and lack social protection. Social and economic

disintegration processes tend to exclude many older people from social participation and expose them to highly vulnerable living conditions (Spitzer et al., 2009).

During the United Nations Second Assembly in Madrid 2002, the General Assembly gave birth to the International Plan of Action on Ageing. However, it must be noted that older people are not explicitly mentioned in the Millennium Development Goals (MDGs) that aim at halving the world's population living in extreme poverty by 2015 (Spitzer et al., 2009). "Yet the link between social protection and the achievement of the MDGs is evident since the key objective of social protection is to reduce the vulnerability of the poor" (Devereux & Sabates-Wheeler 2004; Schubert & Beales 2006). After the Madrid Conference, the African Union called on its member states to formulate policies on ageing, and the United Republic of Tanzania responded to this call by creating a National Policy on Ageing to set a base for promoting health care, participation, and income security for its older population (Spitzer et al., 2009). Tanzania is the second country after Mauritius to have set such a concrete policy on ageing. However, the Tanzanian government's concrete action to provide social protection to people in their old age is still to come (ibid). As a result of this, 10 percent of older people choosing to participate in the indigenous poultry keeping project is significant. The poultry project can be interpreted as a social intervention for that group of vulnerable people in the study community. More of such people must be encouraged to participate in the poultry project.

The people in the study community are farmers who use simple tools such as cutlasses and hoes to till the land. This type of farming involves more physical energy, so at the age of sixty, it becomes almost impossible for that age group to continue farming on the land because of a lack of energy. As a result, this group of people are part of the most vulnerable people in the community. Poultry keeping does not involve more physical energy, which perfectly suits people with such reduced physical power. With increasing medical bills and other related expenditures that come with ageing, the indigenous poultry keeping business would give them the financial freedom that they need at that stage of their lives. This was confirmed by Mr. Nassoro Kibunda (72 years old) from Kiyungi darajani village when he stated that "*I like this project as it is like my salvation because, at this age (72 years), I can't do the manual work like crop cultivation. I have received the first batch of 100 chicks, of which I took great care of them until they reached the selling stage. Fortunately, there were about 40 cocks, of which I sold for TZS 15000 each. I used the money to buy new*

chicks, household expenditure and expanding the poultry house. I confess that this business helped me a lot to develop economically…".

It was again revealed from the data that the majority (75.3%) of respondents had primary education. This was followed by secondary education (23.4%) and tertiary (3.3%). The high percentage of respondents with primary education in the poultry business is positive. This is because people with primary education cannot find jobs in the formal sector and stand the risk of being unemployed with its associated negative consequences. For instance, youth unemployment in rural areas often leads to rural-urban migration. Many youth migrating to urban areas searching for jobs end up not being employed due to their lack of skills and the existence of fewer jobs in the urban areas. In Tanzania, for example, most youths migrate to urban areas believing that there is plenty of work in the cities, which is often not the case (Msigwa & Kipesha, 2013). Consequently, this may force them to engage in criminal activities (ibid).

Therefore, it can be interpreted that the poultry business is giving such people secured livelihoods. Such people with little formal education must be encouraged to venture into the poultry business not to become a problem for themselves and society. The data has further shown that all the respondents have had some level of education. This is also a healthy development because such people can easily be taught about the best poultry management practices that are environmentally friendly and increase their profit margins.

2. Purpose of keeping poultry.

Figure 4.0 shows the percentage of the purpose of keeping poultry among respondents. From the pie chart, the data revealed that the majority of the respondents (73.3%) reported keeping poultry to sell meat, 3. 4% kept their poultry for selling eggs only, while 23.3% of them kept selling both meat and eggs. The high percentage of respondents keeping poultry for the meat of sale is consistent with previous studies such as MMA (2018) which concluded that there is an unmet demand for indigenous poultry meat in urban and rural areas in Tanzania and the neighbouring countries and that Indigenous chicken is a niche product preferred by local Tanzanians compared to exotic chicken or beef (ibid).

Another interpretation which can be given for this high percentage for meat purpose of keeping poultry is that keeping poultry for the purpose of selling eggs is expensive and the return on the investment takes a long time of between five months to six months compared

to three months if poultry is kept to sell meat only. In other words, broilers have a shorter maturity period than layers. Therefore, if the market is available, it would seem rational to keep broilers than layers (that is not to say layers are not profitable). According to the farmers, since the farmers got market for their chicken, they chose to keep more broilers than layers because it was more profitable to keep broilers than layers. This was confirmed by Ms Georgina Mwagala in Dumila when she said, *"I have decided to join the poultry business because it takes few months to rear the chicken before putting them into the market. Therefore I get the return quickly, and within a year, I can raise three to four batches hence more profit."*

Another angle is that since the maturity period for layers is longer than broilers, it can be interpreted that keeping poultry for eggs selling takes a longer time to recover the initial capital. But when a poultry keeper has many chickens that lay many eggs, it may be profitable to keep layers because a keeper can sell eggs and buy the chicken feeds per week. However, if the number of laid eggs is small, it is better to sell chicken because the chicken feed costs exceed the revenue generated from eggs, and hence it is not profitable to keep layers. The respondents did not have large farms, so this latter interpretation may explain why they chose to keep more broilers than layers.

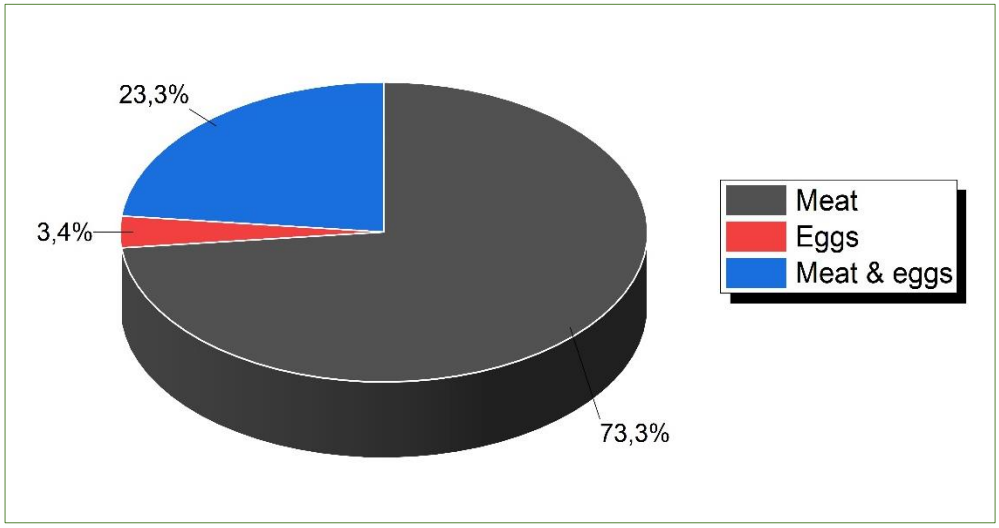


Figure 4.0: Purpose of keeping poultry.

3. Impact of indigenous poultry keeping on the health of poultry keepers.

In comparison to neighbouring countries, Tanzania's total expenditure on health is low. The government of Tanzania's health spending as a percentage of GDP is lower than that of Kenya, Uganda, and Rwanda (UNICEF 2018). The total investments in the health sector

fall short of the estimated minimum financial requirements to provide basic health services to the population (ibid). UNICEF's available data show that in Tanzania, a child's health is likely to depend on where he/she lives and the income of the household with a complementary exemption from the government. Therefore, a child of a family from the poorest quintile is more than twice as likely to die as a child born to the highest quintile (ibid). These explain the crucial roles individuals must play to meet their healthcare needs in Tanzania since the government seems either incapable or unwilling to take that responsibility.

The findings from the data exhibited in figure 4.1 show that 50 percent of poultry keepers who were interviewed in the study community used some amount of their income from poultry keeping to pay for health services. This finding is very significant in that it shows how the poultry keepers prioritize their health and the significant role poultry-keeping plays in maintaining poultry keepers' health in the districts. The data from figure 4.1 again shows that the amount spent on health services ranges from TZS 11,500 to TZS 380,000, equivalent to 9.89 to 326.8 United States dollars. The remaining 50 percent of the poultry keepers interviewed who did not spend any of their income on health services either had health insurance or did not fall sick over the period.

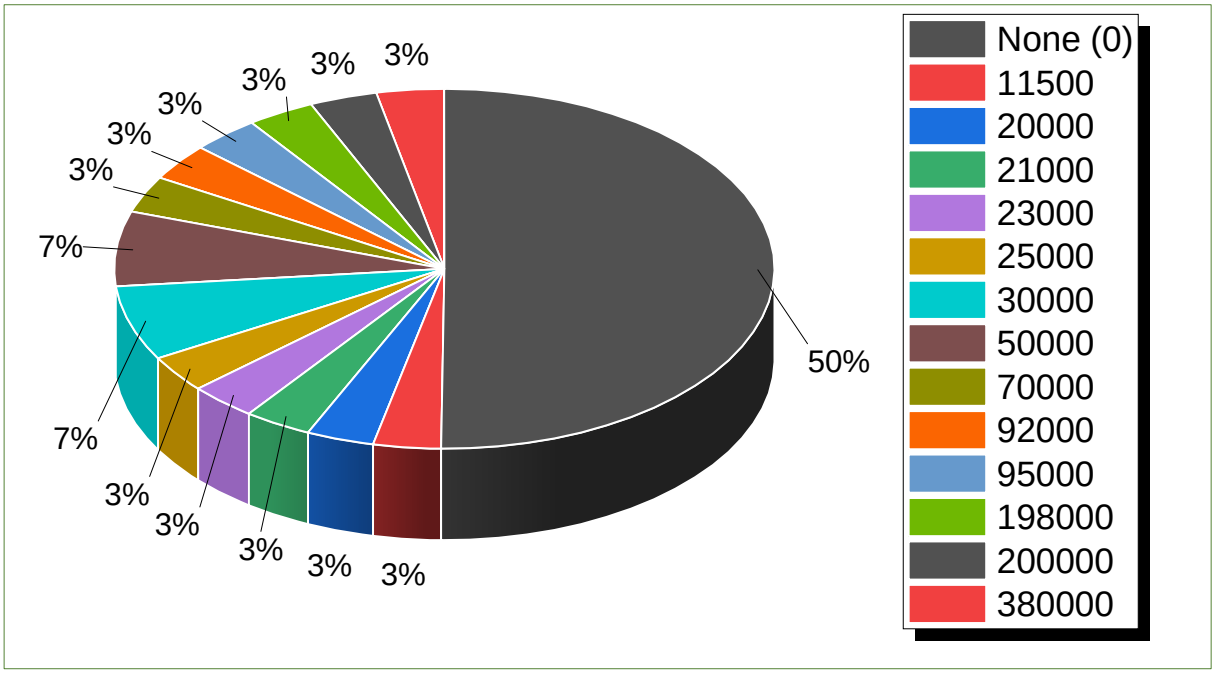


Figure 4.1 Amount in tzs paid for health services by poultry keepers in the study community

To better appreciate how indigenous poultry keeping is securing the health of the poultry keepers in the study community, one needs to look at figure 4.2 below. The pie chart in 4.2 is about the percentage of the poultry keepers who have health insurance. The pie chart shows that 80% of the poultry keepers do not have health insurance. Tanzania has two major health insurance schemes: the National Health Insurance Fund (NHIF), which covers formal sector employees, and Community Health Fund (CHF), which covers the informal sector and rural households. Together with other private insurance schemes in Tanzania, these two major insurance schemes are intended to secure the health of the people. According to UNICEF (2018), "as of March 2018, coverage under the CHF was 13,325,718 representing 25 per cent of the population". From the data shown in the pie chart, only 20 percent of respondents had health insurance consistent with the national figures contained in the UNICEF report. On the one hand, it can be interpreted that 20 percent of the respondent having health insurance is too low. Still, at the same time, it also demonstrates the importance of the indigenous poultry keeping business to the respondents when it comes to healthcare. Indigenous poultry-keeping business can provide quick cash to enable people in the study community to meet their healthcare needs when the need arises.

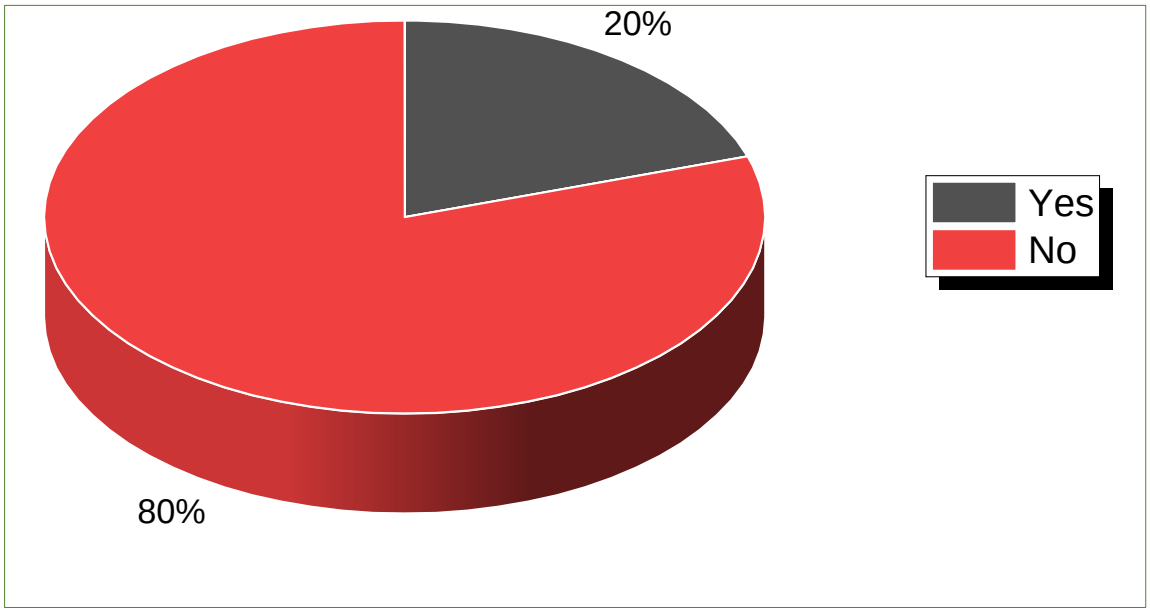


Figure 4.2: Percentage of poultry keepers who have kealth insurance.

4. Impacts of indigenous poultry keeping on education.

Table 4.1 represents findings on impacts of poultry keeping on education in the study community. The findings show that 36.7% of the poultry keepers realized the impacts of poultry keeping on education. The impact of poultry keeping was measured by the amount of poultry income that poultry keepers used to finance the educational expenses of their children and dependents. The data from table 4.2 show that the maximum amount of poultry income that poultry keepers on education paid was TZS 1,550,000 while the minimum amount was TZS 35,000, which is equivalent to approximately 666.50 and 15.05 United States dollars, respectively.

Table 4.1: Amount poultry peepers pay for educational services of children/dependents.

Amount used for education TZS	Frequency	Percent
None (0)	19	63.3
35,000	2	6.7
90,000	1	3.3
150,000	1	3.3
540,000	1	3.3
600,000	1	3.3
900,000	1	3.3
960,000	1	3.3
1,000,000	1	3.3
1,550,000	1	3.3
Total	30	100.0

The amount paid on education varied from one poultry keeper to another depending on the purpose and the type of school children or dependents of poultry keepers attended. For example, government schools in Tanzania do not charge school fees, so poultry keepers who had their wards in private schools spent less of their poultry income on education than parents whose wards enrolled in private schools that charge school fees. Poultry keepers indicated that even though private schools are expensive in Tanzania, they still preferred to send their wards there since private schools provide quality education than government schools. Two women Celine Chilongola 25 years old, and Mwanga Adam 35 years old, respectively in Dumila admitted that; *"I like this poultry project as it first provided me employment and since I have started the business to date, we managed to send our children at private school here in Dumila. He is standard three now (Chilongola)".*

"The poultry keeping enabled me to meet the basic needs, and I managed to send my children to a reputable private school. He is in form four now and another one she is in standard five (Adam)."

This confession shows the importance poultry keepers attach to the education of their children. Education constitutes the surest way to provide livelihood security for one's children. As children become educated, they can create or find decent jobs when they grow. Acquisition of decent jobs then enables these people to have a regular source of income. This allows them to manage their families well in addition to their environment. Better education of children of the smallholder poultry keepers in the study community also helps the poultry keepers directly. In the study community, just like in any part of Africa, it is a common practice (or better still, the responsibility) of children to support their parents financially when they grow. Therefore, as the children find decent jobs through education, they can keep their parents financially whenever they are called upon to do so. This point was confirmed by Salma Miraji, a smallholder poultry keeper and group member in Darajani group in Mijongweni village in Mnadani ward in Hai district who asserted that "*I am glad that my first son sends me approximately TZS 50,000 whenever I do not have money to buy feed*". From the foregoing, it is therefore without dispute that the positive impact that indigenous poultry keeping is promoting in the study community is securing the livelihoods for the smallholder poultry keepers.

5. Impacts of indigenous poultry keeping on house construction and maintenance

Analysis from the data on house construction and maintenance shows that 13.3% of poultry keepers used some income from their poultry keeping for house construction or maintenance. From figure 4.4, which shows these findings, it can also be observed that the profit from poultry keeping that respondents used for buying plot and houses, house construction and maintenance ranges from TZS 1,000,000 while the minimum amount was TZ 150,000.

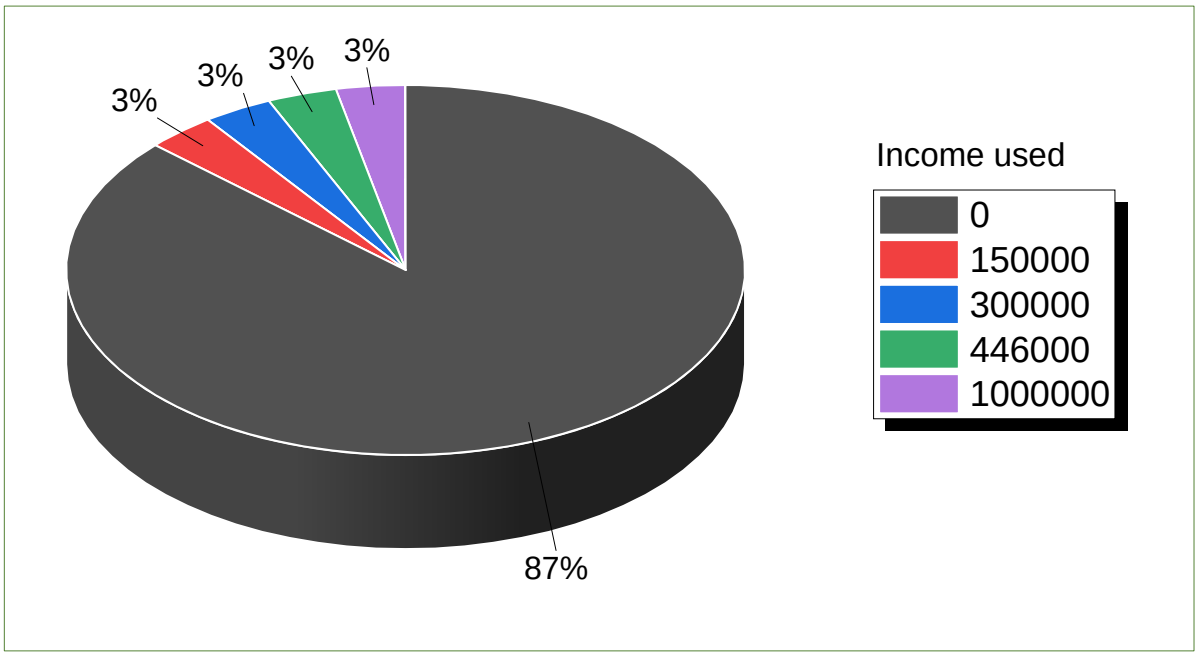


Figure 4.3: Amount of poultry Income used for house construction or maintenance.

Even though a small percentage of poultry keepers in the two districts used some of their poultry income for house construction and maintenance, what the data also implies is that majority of the respondents used their income for other purposes. A very important revelation from the data which cannot be glossed over is the fact that indigenous poultry keeping can contribute to the acquisition and maintenance of houses in the study community. For example, Salma Miraji in Hai district stated that since joining the project to keep indigenous chicken,

"*I have managed to buy a plot for building my own house*". This can further be interpreted to mean that indigenous poultry keeping promotes gender empowerment in the study community. This was confirmed during the focus group discussion when the women asserted that the business has empowered them economically and increased their household value. They could afford to buy household needs such as foods and other domestic conditions without requesting money from their husband, which has reduced petty quarrels at home.

Ownership of houses can improve the livelihood of people in so many ways. For example, people who have houses can rent the rooms in the houses and that can guarantee them regular monthly income. Also, just like assets, one can decide to sell his/her house for

cash when the need arises. Furthermore, living in one's own house helps to save money from having to pay rent all the time.

The testimony of Salma Miraji regarding how indigenous poultry keeping is promoting secured livelihood for people in the study community is very significant in this analysis. During the interview, she stated that "*I quarrelled with my husband in 2016 which forced me to leave the house together with my four children namely, Ismail Fadhili (24 years), Abdallah Fadhili (18 years), Mwanahamisi Fadhili (15 years), and Najma Fadhili (9 years) and went to my mother's house. Life was miserable without support from my ex-husband. Therefore, I worked as a casual labourer in rice, beans, maize, and tomato fields.*

for exchange of small amount of money which ranged from TZS 5000 to 7000 per day. *The money was not enough for me*... [but since I started this project of indigenous poultry keeping] *I have stopped working as cheap labourer in fields and I am able to eat three time a day.* This testimony of Salma is a clear demonstration of how indigenous poultry keeping is promoting livelihood security for smallholder poultry keepers in the study community.

Therefore, this means that indigenous poultry keeping is a reputable business that must be embraced by all in Hai and Kilosa districts to improve their livelihoods.

6. Impacts of indigenous poultry keeping on assets

According to Ellis (2000), assets are the cornerstone in understanding the options available to the poor, the strategies they can adopt to attain their livelihoods, the outcomes they aspire to and the vulnerability context under which they operate. Table 3.5 shows the income indigenous poultry keepers used to purchase assets to the question of impacts of indigenous poultry keeping on assets. The findings from the Table shows that 26.7 percent of respondents used their income to purchase some assets. The value of an asset determines the pricing amount. The amount used by respondents to buy assets ranged from TZS 100,000 to TSZ 600,000.

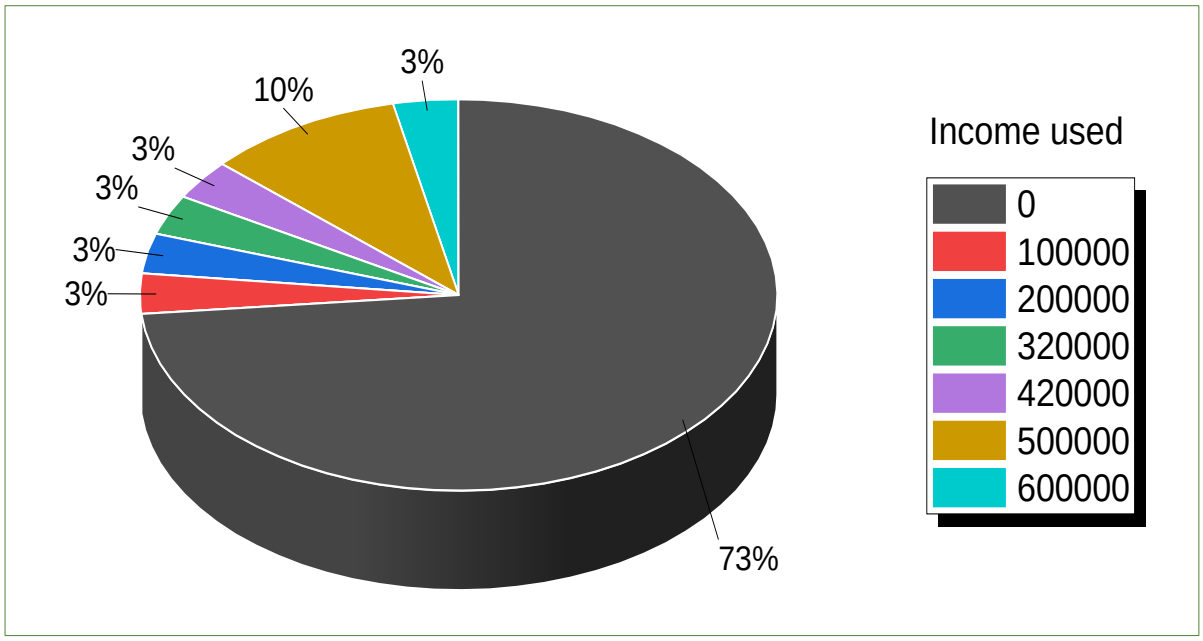


Figure 4.4: Amount poultry Income use to buy assets.

After the farmers sold their poultry, they bought assets such as furniture, utensils, motorcycles, bicycles etc. These assets are very important to the poultry keepers because they confirmed that assets such as bicycles and motorcycles facilitated their poultry business by helping them transport poultry feeds from the market to the farms and carrying their poultry birds to the markets for sale.

Respondents were again asked whether poultry-keeping made their assets increase. 30% of respondents answered in the affirmative. This information is shown in figure 4.6.

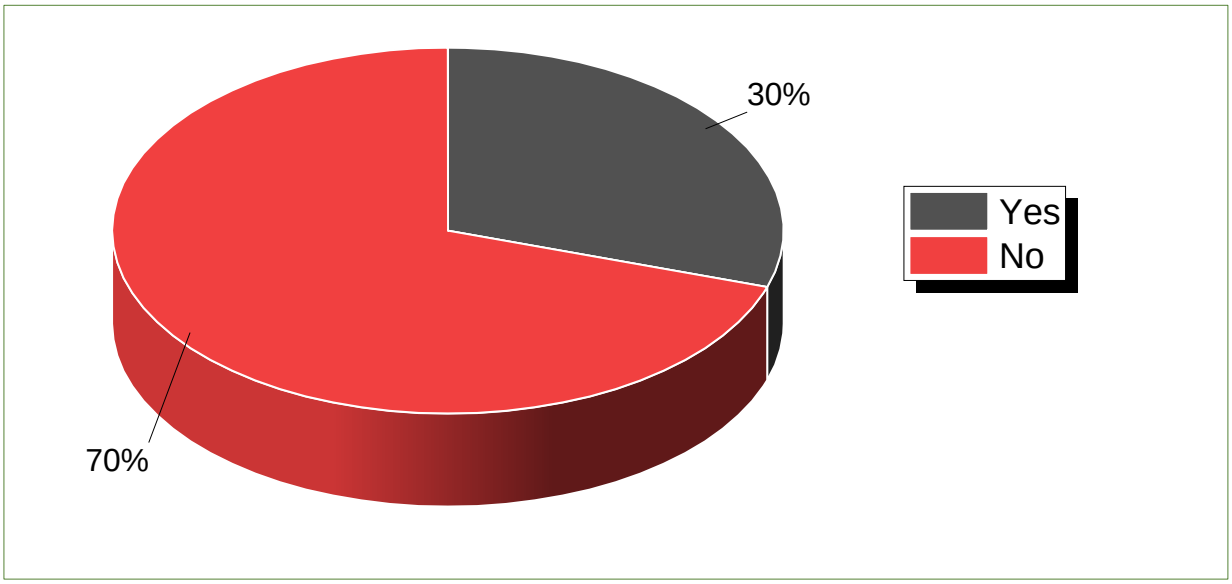


Figure 4.5: Assets increased due to participation in poultry keeping.

Comparison of assets between poultry and non-poultry keepers

A comparison was made between poultry farmers and non-poultry farmers in terms of assets. The data has been displayed in figure 4.6. Taking the data at face value, one is likely to conclude that non-poultry farmers were able to increase their assets more than poultry farmers. However, that was expected initially because the non-poultry farmers are vegetable farmers who depend on the rain for their agriculture. These are the farmers whose livelihoods are threatened by climate change, and for which reason, a coping strategy is needed to secure their livelihood. In the event of poor rains, how would these people survive? The comparison has proven that poultry farmers were able to increase their assets, and that is the most important thing in this analysis. This means that poultry farmers, including the non-poultry farmers, can rely on poultry farming to protect themselves against the threat of climate change.

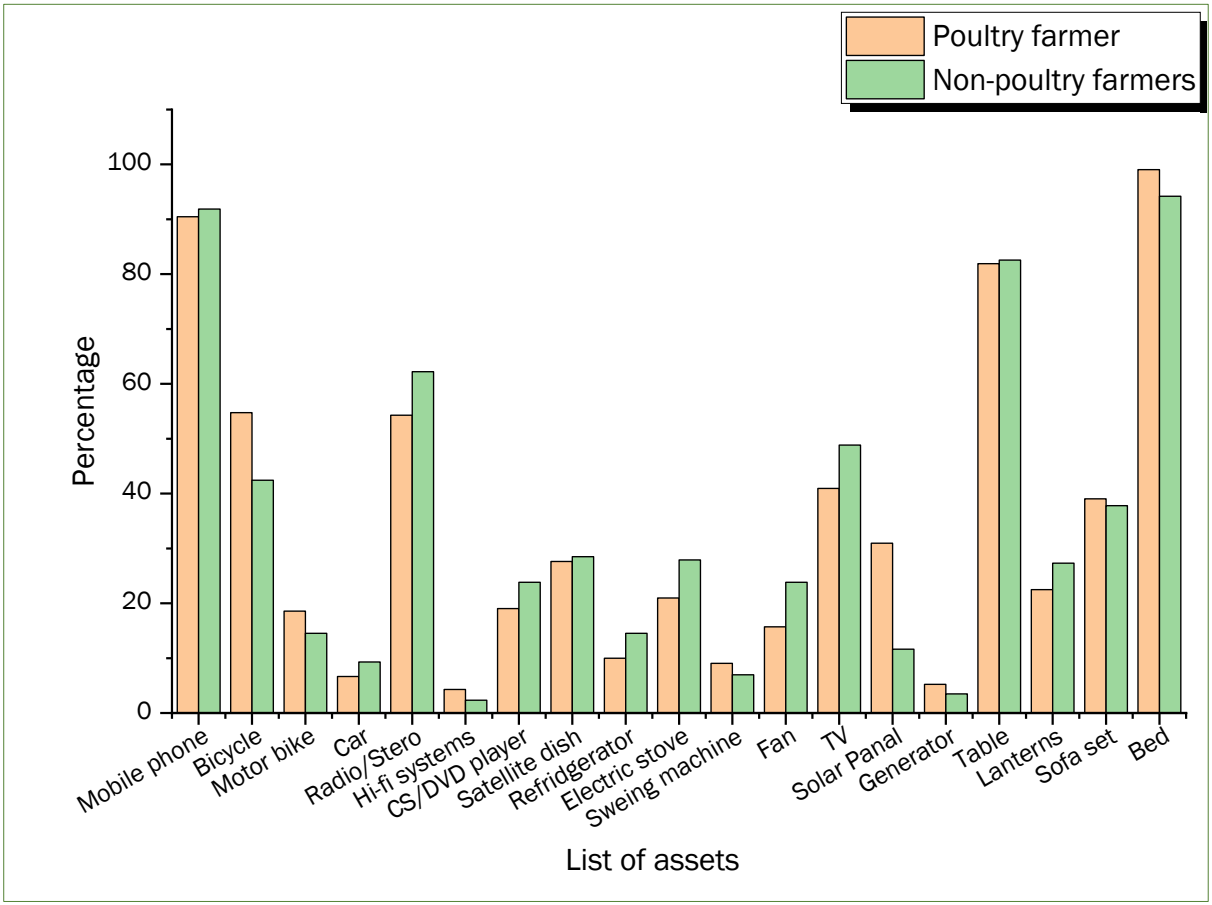


Figure 4.6 Comparison of assets between poultry and non-poultry farmers.

An important point worth stressing is that in addition to these assets facilitating the smooth operation of the livelihood activities of the poultry keepers, assets are also crucial in promoting livelihood security because a person can live by his/her assets. Assets can be easily turned into cash when the need arises, which can then be used to purchase one's needs and wants.

As I have previously stated, the people in the study community are farmers practising rain-fed agriculture to feed their families. This type of agriculture practice is unreliable, especially as the study community is experiencing climate change where the rainfall pattern can no longer be predicted. This means that the people in the study community are under constant threat of facing food shortages. Therefore, not until they design an effective coping plan or strategy, their continuous dependence on rainfed agriculture puts their livelihoods into the category of people who have vulnerable livelihoods.

It is important that, through indigenous poultry keeping, the smallholder poultry keepers are increasing their assets so that when they experience food shortages, they can sell some of those assets to buy food to feed their families. This conforms with the assertion made by Niehof and Price (2001) that for sustainable livelihoods not to degenerate into vulnerable livelihoods, coping strategies are needed. Coping strategies aim to deal with recurrent, hence foreseeable, situations of stress. Niehof and Price (ibid) again stated that an effective coping strategy is a sustainable strategy. According to Chambers (1989), sustainable strategies can be defined as maintaining and enhancing assets. Based on the assertion made by Niehof and Price, therefore, it can be said that indigenous poultry keeping is a coping strategy that the smallholder poultry keepers in the study community can rely upon to increase their assets to mitigate any unforeseen future occurrences. Indigenous poultry-keeping can also be regarded as a practical or sustainable coping strategy because it conforms with the definition of Chambers that effective or sustainable strategies are the ability to maintain and enhance assets (Chambers, 1989). Following this latter importance of assets, one can conclude that people who have assets have secured livelihoods. Therefore, it was not surprising to see that increase of assets due to participation in indigenous poultry keeping became a motivation factor for most people in the study community who were yet to join the poultry business.

7. Market linkages

The market linkages to sell the smallholder produce was compared between poultry (indigenous) and non-poultry farmers (vegetable farmers). A two-sample test for variance

was used to check the variance. Table 4.2 showed that both poultry and non-poultry farmers were significantly different in their market link/access. This data has been graphically demonstrated in figure 4.6. Although our sample size was small, it provided meaningful insight into further studies.

Smallholder farmers were asked about the distance to the nearest market, and surprisingly the average distance for the poultry farmers was 2.5 km, while for non-poultry farmers, it was 1.7 km. The apparent long-distance covered by poultry farmers to access the market may be regarded as an initial challenge to the poultry farmers. As more people enter the business of poultry keeping, the district would become known for indigenous poultry, which would consequently lead to buyers trooping to the districts to buy.

Table 4.2: Two-Sample Test for Variance for comparing market-linkages of poultry and non-poultry farmers.

Two-Sample Test for Variance

Notes

Input Data

Descriptive Statistics

	N	Mean	SD	Variance
"Poultry farmes"	4	9,5	7,04746	49,66667
"Non-poultry farmers"	4	1,75	1,5	2,25

F Statistics

F	Numer. DF	Denom. DF	Prob > F
22,07407	3	3	0,03023

Null Hypothesis: Variance1/Variance2 = 1
Alternative Hypothesis: Variance1/Variance2 <> 1
At the 0.05 level, the two population variances are significantly different.

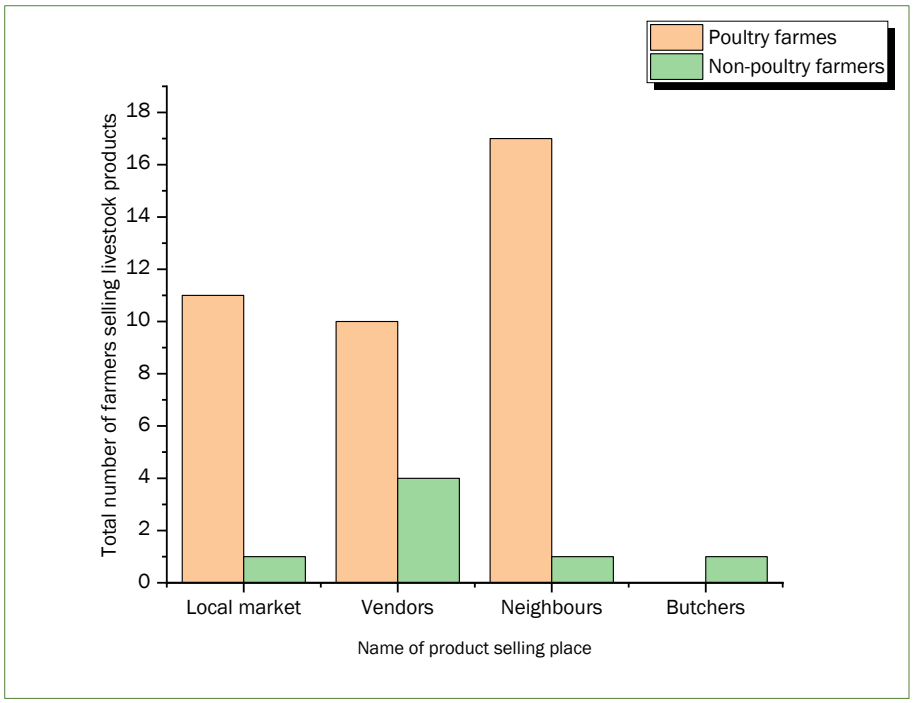


Figure 4.7: A comparison of poultry and non-poultry farmers selling their produce at different selling points in the study *community* in Tanzania.

8. Comparing income and expenditure between poultry and non-poultry farmers.

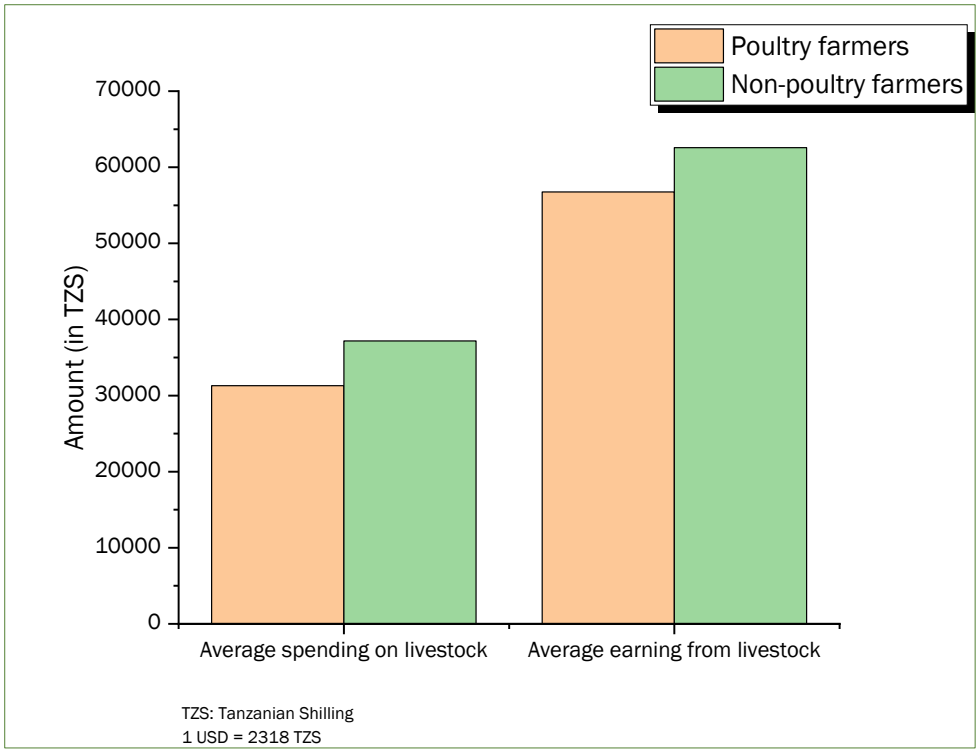


Figure 4.8: Expenditure and earnings between poultry and non-poultry farmers in study community in Tanzania.

The expenditure and earning of poultry and non-poultry farmers were compared, and the data has been graphically shown in figure 4.8 above. From the data, it was observed that non-poultry farmers' expenditure and earnings were higher than poultry farmers. This was also expected because it was difficult comparing the size or value of vegetable farms with poultry farms. This is because vegetables do not have stable market prices compared to poultry, and it is possible vegetables had reasonable prices at the time of the research. The most important thing that has further been revealed in the data is the profitability of indigenous poultry farming in the district because the average earnings exceeded the expenditure.

COMPARING THE FINDINGS IN THE STUDY COMMUNITY IN TANZANIA WITH GHANA

Generally, this research has largely confirmed the following:

First: Indigenous poultry keeping is a profitable venture in the study community and largely in Tanzania, as other researchers and experts had previously noted. This conclusion is based on the positive impacts recorded in all the sectors that were the focus of the study. To put it more succinctly, the study found positive impacts on house construction and maintenance, assets, education, and healthcare of poultry keepers in the study community. As was previously noted, when other people in the study community who were yet to take indigenous poultry keeping as a business began to see the positive impacts on the lives of those in the poultry business, it became a big motivation for them also to join the business. However, this positive outlook of indigenous poultry keeping in the study community and of course Tanzania cannot be seen in Ghana.

Ghana began her aggressive trade liberalization policies in the 1980s in compliance with the Breton Woods institution of the International Monetary Fund and the World Bank. This led to the influx of cheap imported chicken into the country and almost instantly killing the indigenous poultry industry. Since the year 2000, many of the commercial poultry farms that were established in the 1960s and early 1970s, including Darko Farms, Pomadze Farms, Midland Farms, and Acme Hatchery, have all collapsed and/or are on the verge of collapsing and/operating far below capacity (Kusi et al., 2015). The poultry farmers have since vented their frustration on the government to ban the importation of chicken into Ghana. In response to the protests of the poultry farmers resulting from the negative impacts of trade liberalization in the poultry sector, the government decided to take measures to protect the farmers. Accordingly, in 2003, the Government of Ghana, in the budget, agreed to increase tariff on imported poultry from 20 to 40%. The government of

Ghana went ahead to pass the proposed increase into law (Act 641) through the parliament of the Republic of Ghana.

In a surprising move, the Act was suspended by the same government on May 12th, 2003- just within four days after the start of its implementation. The withdrawal of Act 641 by the government led to series of protests by farmer-based organizations and Non-Governmental Organizations in Ghana. According to ISODEC (2007), the Ghana National Association of Poultry Farmers, with the support of the Centre for Public Interest Law (CEPIL) filed a writ at the High Court of Justice against the government decision to suspend the law. After a lengthy legal battle in court, the High Court ruled in favour of the poultry farmers on March 11th, 2005. In a somewhat surprising move, under what is called a certificate of urgency, the government rushed to its controlled parliament on March 18th, 2005, to have Act 641 repealed even before her Lordship Ashong-Yakubu delivered her verdict. In a heated vote in parliament, the then ruling New Patriotic Party majority in parliament in a vote of 98 against 92 by the opposition National Democratic Congress scraped Act 641.

Further checks revealed that the International Monetary Fund put pressure on the government to have the Act repealed (ISODEC, 2007). The long and short of it all is that, if the Ghanaians poultry industry were that profitable, as the study has shown in Tanzania, poultry farmers and the government would not have this tug of war. The data has shown that there was not any time where any poultry keeper called for either a ban or reduction of imported chicken as their counterparts in Ghana have always been doing including going to court. This, therefore, can be interpreted to mean that the Tanzanian local poultry industry is better than that of Ghana.

Secondly: Chicken consumers in Tanzania of all walks of life prefer indigenous chicken, whether processed or not; hence the demand for it is high. The poultry keepers in the study community sold live birds instead of processing them before selling. Even though the birds were not processed, the poultry keepers still found a market for their chicken and made profits. They did not have to wait until critical religious festivals such as Christmas and Easter, or Ei-dul Fitr and Ei-dul Adha before selling their chicken. As soon as the chicken were ready for market, they took them to the market and sold them. This is consistent with many previous research findings cited in this thesis that chicken consumers in Tanzania have a perception that indigenous chicken is healthier than exotic chicken. Therefore, there is always a ready market for indigenous chicken in the country.

The case in Ghana, however, is different. Many previous research findings have shown that even though chicken consumers in Ghana, just like their counterparts in Tanzania, hold the same view that indigenous chicken is healthier, most Ghanaian chicken consumers still prefer to buy exotic chicken at the expense of local ones. This is because, in addition to imported chicken being cheaper than the indigenous ones, most consumers of imported chicken are urban dwellers whose work schedules may not allow them the time to purchase live poultry for consumption, so they prefer to purchase poultry processed into convenient parts, which saves time during meal preparation. However, local poultry producers mostly sell live birds, and if processed for sale, birds are sold whole due to lack of facilities to further process and store them [Netherlands Enterprise Agency 2019; ISODEC 2004]. Unlike their Tanzanian counterparts, Adei and Asante (2012) noted that indigenous poultry keepers in Ghana could only make meaningful sales during important religious festivals such as Christmas and Easter.

Finally, another significant noticeable finding revealed in this research is that majority (73.3%) of the respondents kept their poultry to sell meat. This shows that there is high demand for indigenous chicken in the study community and Tanzania as a whole and that it is more profitable to keep poultry to sell meat than for eggs. In other words, broiler production is profitable in the study community. Ms Georgina Mwagala in Dumila confirmed the profitability of broiler production when she disclosed that:

"I have decided to join the poultry business because it takes few months to rear the chicken before putting them into the market. Therefore I get the return quickly, and within a year, I can raise three to four batches hence more profit."

This significant finding also shows that the Tanzanian local poultry industry has not been badly affected by the influx of cheap imported chicken products, unlike many African countries such as Ghana. The finding in the study community and Tanzania is, however quite the opposite in Ghana. Because of the problem of selling their birds, poultry farmers in Ghana have now resorted to keeping poultry for the purpose of selling eggs than for meat. In research entitled 'The challenges and prospects of the poultry industry in Dormaa district', which is one of the major districts noted for poultry farming in Ghana, Adei and Asante (2012) found that a relatively high percentage (88.9%) of poultry farmers engaged in the rearing of only layers. The reason for the emphasis on the rearing of layers at the expense of broilers which are relatively cheaper to rear, is attributed to the absence of processing plants to process the broilers for the market coupled with the seasonal

(Christmas and Easter) nature of demand for live chicken by most consumers in Ghana. Mahama et al. (2013) also conducted research entitled 'Break-even analysis of broiler production in Accra-Tema and Kumasi areas'. They concluded that the overall net present value for the economy was negative, which suggests that broiler production is not economically viable in the country.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

In this thesis, I have discussed how indigenous poultry keeping promotes secured livelihoods for smallholder poultry farmers living in the Hai, Kilosa, Moshi and Babati rural districts of Tanzania. The study found that indigenous poultry keeping positively impacts assets, house construction and maintenance, education, and health of the smallholder poultry farmers in the two districts.

Firstly, the study found that through indigenous poultry keeping, the smallholder poultry keepers in the study community could increase their assets. Assets such as motorcycles, bicycles etc., facilitated the smooth operation of the livelihood activities of the poultry keepers by helping them transport feed from the markets to their farms and poultry birds to markets for sale. I also argue that the increase of assets is a sustainable coping strategy that secures the livelihoods of smallholder poultry keepers in the study community against any future stress.

Secondly, the study established that indigenous poultry keeping has a positive impact on house construction and maintenance. I argue that house ownership secures the livelihoods of the poultry keepers because they can rent the rooms and give them a regular income source. Having houses also saves the poultry keepers money because they do not have to pay rent. Furthermore, they can sell the place to get cash when the need arises.

Thirdly, the study established that the smallholder poultry keepers could pay for the educational expenses of their children and dependents in both government and private schools. I argue that through education, the poultry keepers are securing the future livelihoods of their children. The poultry keepers also benefit directly from their children's education through future support they may receive from the children when they grow and find decent jobs.

Finally, the study established that even though 80% of the smallholder poultry keepers do not have health insurance, they could still pay for medical services through indigenous poultry keeping. I argue that indigenous poultry keeping has become something like health insurance that secures the health of those who do not have health insurance to pursue their livelihood activities.

Based on the above findings, the study has concluded that indigenous poultry keeping promotes secured livelihoods for smallholder poultry keepers in the Hai, Kilosa, Moshi and Babati rural districts of Tanzania.

The study, however, recommends the following:

1. Poultry keepers must have health insurance: Indigenous poultry keepers in the study community must be encouraged to join any health insurance schemes in Tanzania. When poultry keepers have health insurance, it is believed that will enable them to save more money from their poultry business, which they can use for other purposes such as buying more assets, building houses, etc.
2. Loans. The government must give loans to indigenous poultry keepers to motivate more people to venture into indigenous poultry keeping as a business. It is believed that when more people join the indigenous poultry business, it will reduce unemployment and the importation of chicken to Tanzania, which would, among other things, strengthen the national currency.
3. Reduction of interest rates on loans. Government must lead the crusade to get banks in Tanzania to reduce their interest rates on loans for indigenous poultry keepers to boost the indigenous poultry business.
4. Formation of cooperative unions. The smallholder indigenous poultry keepers must be encouraged to form cooperative unions, making it easier for them to attract loans from the banks for their business. The formation of the co-operative unions would also make it easier for veterinary officers to reach the poultry keepers. Again, the unions could be used to educate the poultry keepers about modern methods of keeping poultry, record keeping, etc.
5. Free veterinary services. Government must provide free veterinary services to indigenous poultry keepers to reduce the spread of diseases in the farms.
6. Community sensitization about the prospect of indigenous poultry business. Government and the media must sensitize the local people about the prospects in the indigenous poultry business. During the study, it was observed that most people did not know they could take indigenous poultry keeping as a business. However, when they saw results about the increase of assets resulting from the indigenous poultry business, they were encouraged to join the business.
7. Poultry farmers seem more market-oriented. Linkages with the market will impact on livelihoods of smallholders; hence a “whole-farm” approach involving all species of livestock (in addition to poultry) will increase the smallholders’ resilience by lowering the associated risk due to climatic conditions and improved liveihoods.

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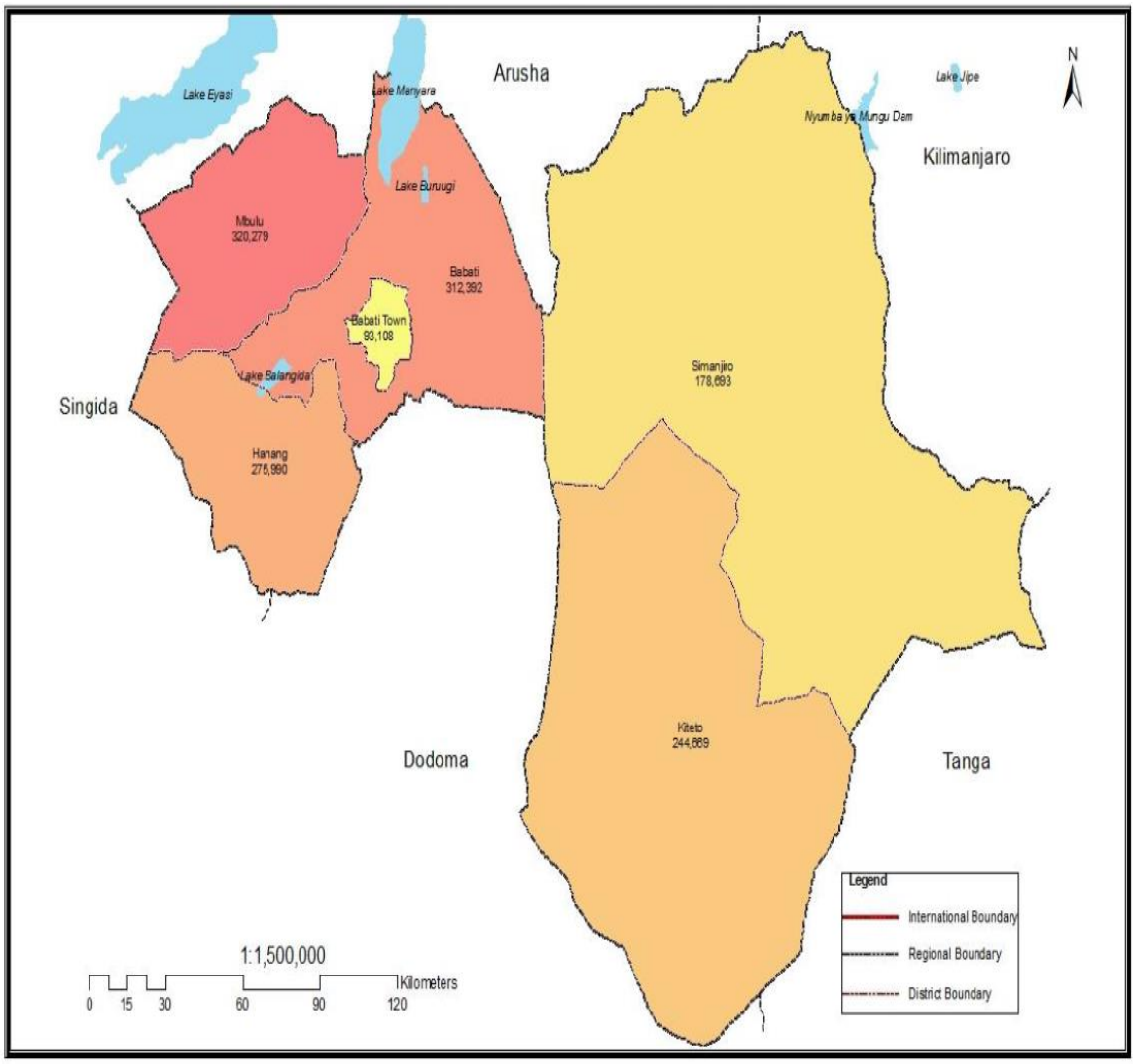
APPENDICES

Appendix 1: Map of Manyara region showing Babati rural district.



Mayera region showing Babati rural district. (Source: 2012 National Census).

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