

A need to introduce processing practices of indigenous chickens in the value chain. The case of Singida Municipality, Tanzania.

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By

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DEDICATION

This work is dedicated to my son Innocent who had a serious respiratory disease “Adenoid Hypertrophy” and got surgical operation during this study. Thanks to Almighty God for healing him.

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LIST OF ABBREVIATIONS

ASDP	- Agriculture Sector Development Programme
BRAC	– Bangladesh Rural Advancement Committee
DADPs	- District Agriculture Development Projects
FAO	– Food and Agriculture Organisation
FGDs	- Focus Group Discussions
HACCP	- Hazard Analysis Critical Control Point
ICT	– Information Communication and Technology
NBS	- National Bureau of Statistics
NMB	– National Microfinance Bank
NGO	- Non-governmental Organisation
SWOT	- Strength, Weakness, Opportunity, Threat
SEMA	– Sustainable Environment management Action
TFDA	- Tanzania Food and Drug Authority
PESTEC	– Political, Economic, Social, Technologic, Environmental, Cultural
NFP	- Netherlands Fellowship Programme
VETA	– Vocational Educational and Training Authority
SIDO	– Small Industries Development Organization

ABSTRACT

A need to introduce indigenous chicken processing practices in the value chain was the topic of this case study. The case study was conducted in Singida Municipality, Singida region in central Tanzania. The visit was also done to Dodoma city, Dodoma region in central Tanzania to get experience on chicken processing practices. Objective of this study was to understand the market opportunities available and constraints of indigenous chicken processing in order to advise Singida Municipal Council and stakeholders on concrete solutions that enable incorporation of processing function and new market segments such as butcher shops and supermarkets in the value chain. Data were collected from interviews using checklists, Focus Group Discussion and Stakeholders meeting. 10 indigenous chicken farmers were purposively selected for interviews from two wards namely Mandewa and Mwankoko while other stakeholders (chicken wholesalers, retailers, traders and butchers) were purposively selected for interviews from Singida Municipal town where their businesses are based. 7 livestock officers attended the Focus Group Discussion while the stakeholders' meeting was attended by respondents of the interviews and Focus group discussion. The research results show that the market opportunities available for indigenous chicken processing in Singida Municipality include: availability of hotels, restaurants, catering services and individual customers who need slaughtered chickens, availability of indigenous chicken markets outside Singida region, community preference of indigenous chickens and population growth of people in Singida Municipality. Many customers require indigenous chickens with average weight of 1.5kg – 2.0kg. Constraints of indigenous chicken processing are: Lack of chicken slaughtering facility unlike Dodoma city which has chicken slaughtering facility and processed chickens are sold in supermarkets, lack of chicken butcher shops, inadequate capital of stakeholders to invest in chicken processing, limited awareness of community on chicken processing, limited market and market information for processed chickens. However, the study results show that there are initiatives done on indigenous chicken processing which include: Planning of indigenous chicken processing project in Singida Municipal's 5 years Strategic Plan (2015 – 2020), identification of Majengo area by Singida Municipal council for indigenous chicken market and small-scale abattoir construction, involvement of government institutions (such as VETA Dodoma) conducting training on chicken processing to stakeholders in Singida Municipality. It is therefore recommended Singida Municipal Council to collaborate with stakeholders to establish chicken slaughter facility in a Public Private Partnership.

CHAPTER ONE

1 INTRODUCTION

1.1 Background information

Village poultry farming has been part of human development for centuries and continue to play a vital role in rural livelihoods, especially those of the remote and poorer communities in developing countries (Alders and Pym, 2009). Household chicken production provides food and income and is an important component of food security for the rural poor. About 85% of rural families in Sub-Saharan Africa keep poultry as source of capita and dietary protein and they make a significant contribution to poverty alleviation, food security and social status (Randloph et.al., 2007). Indigenous chickens can contribute to the increased availability and access to micronutrient - rich animal protein in Sub – Saharan Africa where diets are predominantly plant – based and micronutrients deficiencies in children are highly prevalent (Asem-Bansa et. al., 2012).

In Tanzania, poultry farming plays an important role in improving rural livelihoods and contributes to the national economy. Chicken population in Tanzania was estimated to be 42.7 million, out of which 95% were indigenous chickens and mostly reared by rural households (NBS, 2012). The poultry industry in Tanzania is divided into traditional poultry production and commercial poultry production. The traditional poultry sector is the largest contributing to about 70% of the flock and supplying 100% of poultry meat and eggs consumed in rural and 20% in urban areas (Kaijage, 2015; Boki, 2000).

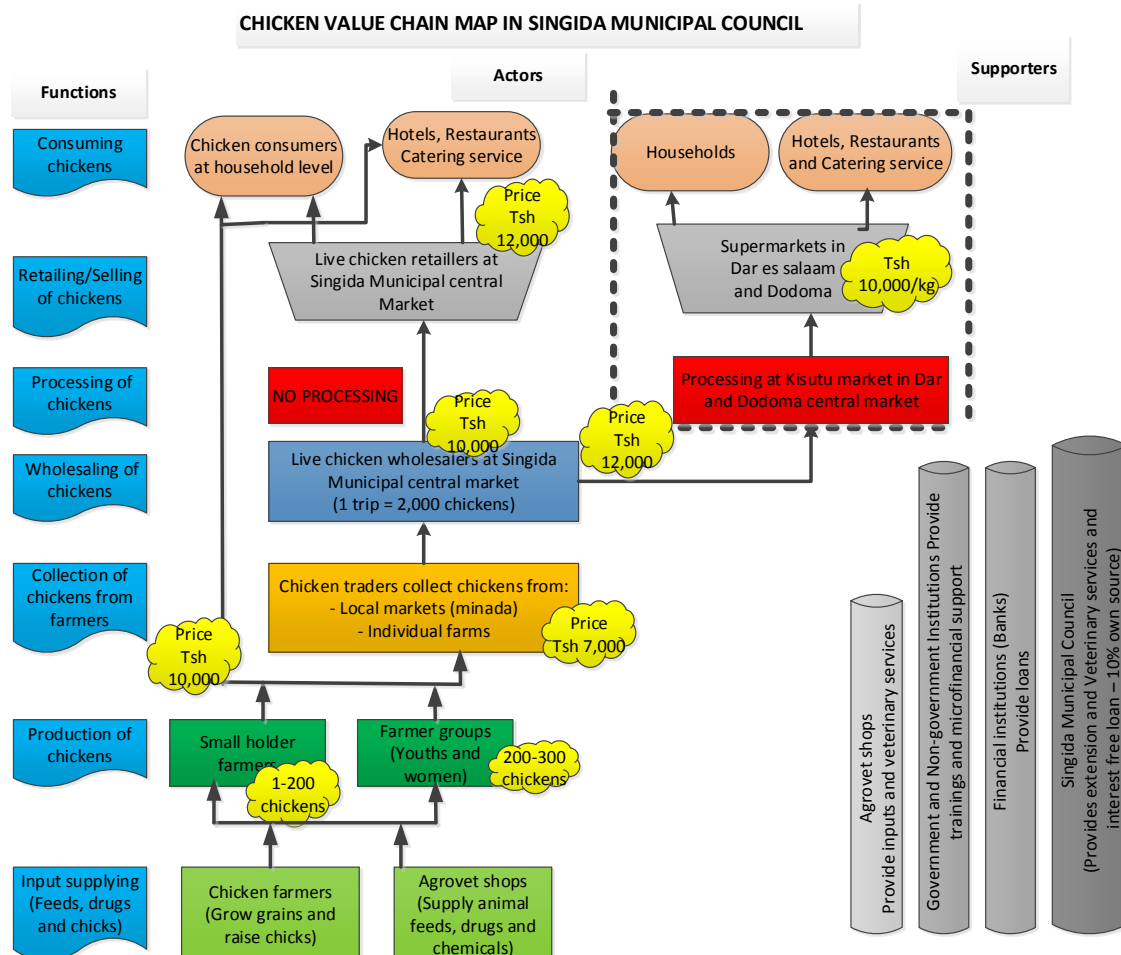
Singida is the famous region for indigenous chicken (*Gallus domesticus*) production in Tanzania with estimated population of 1.6 million chickens (NBS, 2012). In Singida Municipality, the government (Singida Municipal Council) has been supporting smallholder farmers of indigenous chickens through development projects (ASDP – DADPs) by supplying vaccinations and offering extension services so that smallholder farmers can increase production of chickens for food security and raise their income to improve their livelihoods. Smallholder farmers have been encouraged to engage in indigenous chicken productions due to the high demand in market since customers prefer indigenous chickens and urban consumers pay significantly higher price (Queen et al., 2016).

Indigenous chicken value chain in Singida Municipality include the following actors: livestock input suppliers (veterinary shops and veterinary centres), chicken producers (smallholder farmers and farmer groups), traders, live chicken wholesalers, live chicken retailers and consumers. Chicken traders (middle

men) collect chickens directly from farmers or from local markets to urban market (wholesalers). The later distribute some live chickens to retailers at Singida central market and other chickens are transported to big cities such as Dodoma and Dar es salaam. Also, farmers sell live chickens directly to neighbour households, hotels and restaurants.

Along this chain, there are supporters namely Singida Municipal council which support the chain by providing extension/veterinary services to farmers and free interest loan to youth and women group farmers. Other chain supporters are governmental (VETA, SIDO) and Non-governmental (SEMA, BRAC) institutions, financial institutions (banks and microfinances) and Veterinary centres which offer extension and veterinary services (Singida Municipal Council, 2017).

Figure 1: Indigenous chicken value chain in Singida Municipality.



1.2 Problem statement

In Singida Municipality chickens are sold live in markets; no processed chickens are retailed in butcher shops and supermarkets leading to missing opportunities of potential customers in the middle and high-income categories along indigenous chicken value chain.

1.3 Justification

Indigenous chicken value chain mainly consists of producers, traders, wholesalers and retailers; there are no processors along the chain meaning that chickens are sold live (in open markets) and consequently cannot be retailed through market segments like supermarkets leading to missing opportunities of potential customers in the middle and high-income categories who normally shop from supermarkets (Bwalya, 2014). Indigenous chicken value chain in Singida Municipality lacks processing function, all chickens are sold live within and outside Singida Municipality. There is no any research done on market opportunities and constraints of indigenous chicken processing in Singida Municipality of which is the aim of this study.

1.4 Research objective

To understand the market opportunities and constraints of indigenous chicken processing in order to give concrete recommendations that will enable Singida Municipal Council and indigenous chicken stakeholders to incorporate processing function and new market segments such as butcher shops and supermarkets in the value chain.

1.5 Main research question 1

What is the status of market availability for indigenous chicken processing?

1.5.1 Sub questions 1

- i. What are the market opportunities available for indigenous chicken processing?
- ii. What are quality attributes of processed indigenous chickens required?

1.6 Main research question 2

What is the status of current indigenous chicken processing practices?

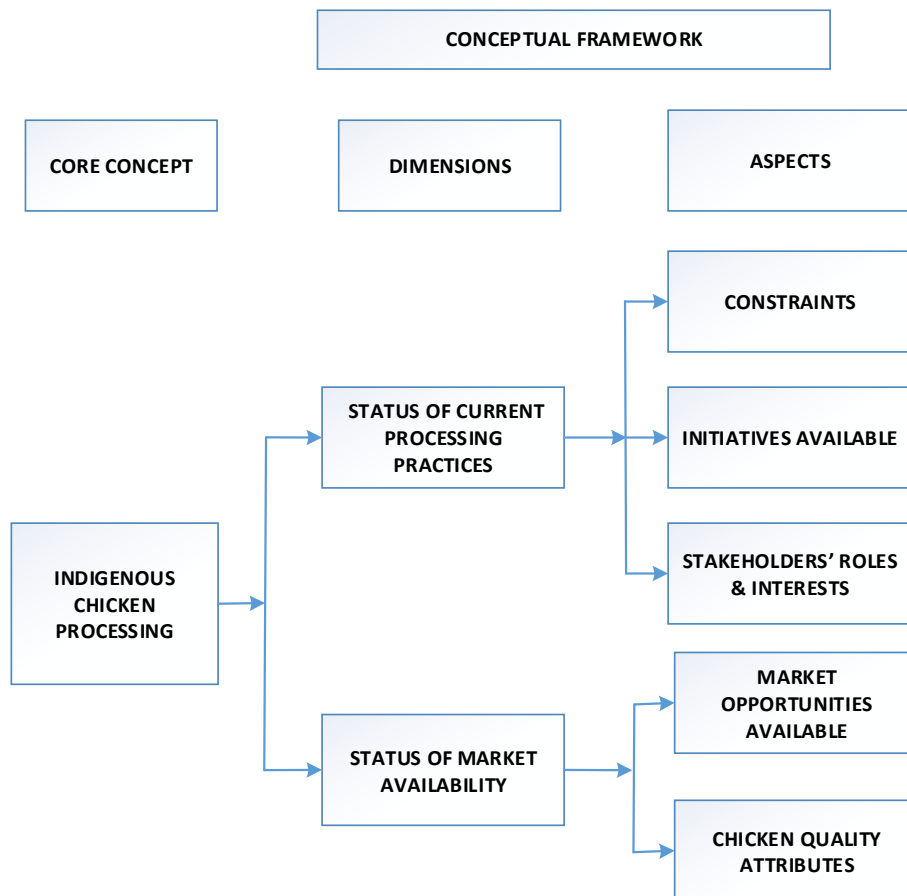
1.6.1 Sub questions 2

- i. What are the constraints of indigenous chicken processing?
- ii. What are the current initiatives for indigenous chicken processing?
- iii. What are the stakeholders' roles on indigenous chicken processing?

1.7 Conceptual framework

A conceptual framework is the researcher's understanding of how the particular variables in his study connect with each other. Thus, it identifies the variables required in the research investigation. It is the researcher's "map" in pursuing the investigation. It sets the stage for the presentation of the particular research question that drives the investigation being reported based on the problem statement (McGaghie *et al.*, 2001). Figure 2 below is the conceptual framework for this study.

Figure 2: Conceptual Framework



1.8 Definition of concepts

1.8.1 Indigenous chicken

Any flock of chickens that are kept under free-range management and on which no selection of breeds or improvement by crossbreeding has been done is considered as a flock of indigenous chickens. Indigenous chicken farming is usually backyard poultry rearing, rural poultry production or scavenging (Ondway et al., 2006).

1.8.2 Chicken processing

Is a general process of turning live birds into meat followed by other components necessary for successful meat production, including regulatory compliance, food safety considerations, and proper packaging (Smith, D. P., 2014).

1.8.3 Value chain

Value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. (Kaplinsky et al., 2001).

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Indigenous chicken productions

Indigenous poultry are dominant type of rural poultry kept in low input production systems, as free-range scavengers with some additional feeding of household scraps or locally produced grains. They are kept for home consumption or sold for cash (Queen et al., 2016).

Productivity of indigenous chicken is low due to prevailing poor management practices in particular poor health care, nutrition and housing. The age of hens at first lay ranges between 6 to 8 months and in average hens have 3 laying cycles per year. The average live weight of indigenous chickens is 1.9kg for cocks and 1.4kg for hens respectively (Mwalusanya et al., 2002).

2.2 Value chain concept

A value chain is a specific type of supply chain where the actors actively seek to support each other so they can increase their efficiency and competitiveness. They invest time, effort and money, and build relationships with other actors to reach a common goal of satisfying consumer needs and so they can increase profit.

Value chain actors are those direct actors which are commercially involved in the chain (input suppliers, producers, traders, processors, whole salers, retailers and consumers) of a particular product; and indirect actors (supporters) which provide financial or non-financial support, these include bankers, credit agencies, business service providers, government, researchers and extensionist (KIT, Faida MaLi and IIR, 2006). Value chain is also understood as analytical and operational model. The model takes the fact that a product is rarely directly consumed at a place of its production. It is transformed combined with other products, transported, packaged, displayed until it reaches final consumer (Rodune, 2007).

2.2.1 Indigenous chickens value chain and marketing

The indigenous chicken value chain is generally informal and underdeveloped. The main actors along this value chain are smallholder farmers, primary collectors and live bird traders and agents, wholesalers and retailers. The main marketing channels are from farmer to trader or consumer; the other marketing channel is from farmer to retailer and then to consumer. Some farmers sell chickens directly to restaurants while others sell to traders who take chickens to urban markets (wholesalers). The final, end market of indigenous chickens is domestic consumption through retailers (Bwalya, 2014).

The chicken offtake from farmers depend much on intermediaries (primary collectors), several of whom are part time farmers. The time that producers have the highest need to sell chickens, coincides with planting season when part time intermediaries would be active in their farm activities, thereby reducing a reliable off take mechanism (Queen et al., 2016).

Marketing of indigenous chickens is done by selling the chickens to households within the villages, local markets and town markets. Market channels are explained as informal, poorly developed and lack firm data on throughput and standard unit pricing (Queen et al., 2016; Mlozi et al., 2003).

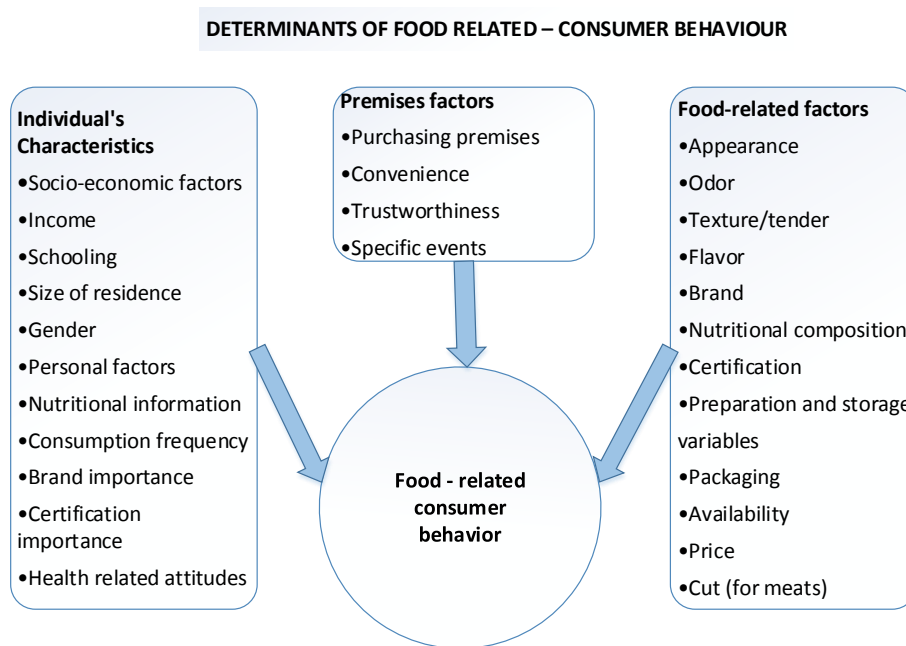
2.3 Indigenous chicken high value market segments

Ayieko et al. (2015) studied factors which cause farmers not to participate in indigenous chicken high value market segments (such as supermarkets) and found that: the age of household head has a negative effect because as age increases household heads are not likely to participate; education level of the household head has a positive effect such that literate household heads are likely to participate; producers in farmer groups are likely to participate due to benefits such as information access and bargaining power; farmers with high number of indigenous chickens are likely to participate due to assurance of continuous supply of chickens; farmers processing chickens are likely to participate because high value market accept processed indigenous chickens. Therefore, it is recommended that collective action should be used to enhance productivity, processing and marketing of indigenous chickens.

The indigenous chicken market has three levels that vary in terms of the operations, products, location and number of participants that are found at each level (Bett et al., 2012). At the third level (high value market segment), consumers are willing to pay higher prices to get safe and quality products; with product differentiation, value addition, packaging of products and no division of indigenous chicken into smaller units (Gamba et al., 2005).

Raimundo et al. (2015) researched on chicken meat market segments and reported that whole chicken is bought by consumers with low income and men while chicken cuts are preferred by women due to low presence of fats in the products. Therefore, chicken meat products should be sold according to consumers preference; also, for raising awareness among these consumers and influence their consumption, one must invest in improvements in features that stimulate their senses (packaging, texture, odor, color) and especially in sales promotions.

Figure 3: Determinations of food related – consumer behaviour



Adapted from: Raimundo et al. (2015)

2.4 Quality attributes of indigenous chickens and price sensitivity to consumers

Lee et al. (2017) researched on consumer preferences and price sensitivity between indigenous chickens and broilers. It was reported that most consumers prefer indigenous chickens due to their chewy texture; therefore, chicken consumption patterns of consumers indicate that it is necessary to develop breeds with a texture desired by consumers because the texture of indigenous chickens is an important factor in consumer preference. Most consumers prefer direct sales of chickens, it is therefore necessary to enable consumers to purchase indigenous chickens by increasing the accessibility of indigenous chickens. Also, consumers who preferred broilers were sensitive to indigenous chicken price; Therefore, reasonable pricing of indigenous chickens is necessary to increase the purchase of indigenous chickens by consumers who prefer indigenous chickens as well as by those who prefer broilers.

The quality attributes of indigenous chicken meat are concordant with consumer demands for its unique taste and texture and nutritious meat. Different breeds or genotypes of the indigenous chicken can cause a difference in the color of the meat. Rearing systems, such as intensive and extensive farming, promote differences in meat texture. The indigenous chicken reared under the intensive system has

more tender meat and yellowish in skin color. Aging condition, chemical composition and muscle protein properties are reflected in the quality of indigenous chicken meat. The indigenous chicken meat tends to have a longer time of rigor inset with lower ultimate pH compared to broiler meat resulting in lower water holding capacity. The high content of intramuscular collagen, but which is low in myofibrillar protein content, results in tough texture and high cooking loss in the meat during heating at 80 - 100°C. However, the indigenous chicken meat has high glutamic acid content but low fat and cholesterol contents. This, in concomitance with favorable fatty acid profiles, leads to the acceptably palatable meat that is desirable to consumers. The microstructure of muscle fiber and intramuscular connective tissue is the most important influence on the texture of indigenous chicken meat (Wattanachant, 2008).

Meat color is one of the key parameters to consumers as it indicates product's quality. Chickens using free ranges are characterized by a brighter color of meat and a higher contribution of yellow color in muscles, which is due to the content of natural carotenoids in green forage ingested by the birds using free ranges (Ponte et al., 2008). Poultry meat colour is affected by factors such as bird age, sex, strain, diet, intramuscular fat, meat moisture content, pre-slaughter conditions and processing (Tougan et al., 2013).

Most of the local poultry are raised under scavenging or semi-scavenging environment and often slaughtered late given their low genetic potential for growth compared to broilers. The slow growth leads to late attainment of sizable slaughter weight, consequently resulting to production of tough meat (Katarzyna, 2011).

2.5 Status of poultry processing in Tanzania

FAO (2015) reported that most indigenous chickens are slaughtered informally and for home consumption, hotels, restaurants and other commercial centres. There is no formal inspection for disease by competent authority. Only a small number of indigenous chickens pass through urban market for formal slaughter and processing. Chicken from small- scale broiler farms are usually taken to central market and slaughtered in facilities. Most chicken slaughter facilities are privately owned except few slaughter facilities like Kisutu in Dar es salaam. At Kisutu, the Municipality has a slaughter room operated by a cooperative known as Poultry Cooperative Society Limited.

There are also poultry enterprises which slaughter and process broiler chickens in Dar es salaam, Arusha and Mwanza cities. The processed broiler chickens are sold in supermarkets and niche markets. The following table indicates some enterprises and their products.

Table 1: Manufacturers and retailers of value added poultry meat products

Source: FAO (2015)

Company	Location	Daily processing capacity (kg)	Products	Target market
Meat King Company	Arusha	228	Poultry meat	Niche (South African Community)
Happy sausages Ltd	Arusha	1130	sausages	Niche market
Shoprite	Dar es salam and Arusha	Unknown	Imports from south Africa	Retail trade
Bright choice	Dar es salaam	Unknown	Imports from parent company in Nairobi	Retail trade
Mazimbu Agro Enterprises	Morogoro	Unknown	Dressed chicken	Retail, hotels, fast food
Interchick	Dar es salaam	3000	Whole/dressed chicken	Retail, hotels, mining companies
Twiga Foods Ltd	Arusha	3000	Whole/dressed chicken	Retail
Kukupoa Ltd	Mwanza	Unknown	Dressed chicken	Retail

FAO (2015) also reported constraints of poultry processing in Tanzania some of which are caused by contradicting government laws and regulations and other constraints are within the processing industry as follows:

- Poultry market is mainly informal except for small segment that deals with broilers
- Illegal/uncontrolled slaughter of poultry
- Absence of proper slaughter facilities and equipment for poultry that lead to food safety and animal welfare concerns
- Conflicting laws and regulations which are usually not enforced

- Non-valorization of poultry by-products such as blood, head, feet and feathers which are disposed and cause environmental hazards.
- Limited number of customers for value added products

Also, Morec (2010) reported other constraints in chicken processing as:

- Inadequate extension services due to limited transportation facilities,
- Lack of close cooperation between government authorities and farmers in provision of veterinary services, market facilities and market information,
- Unorganized marketing,
- Lack of slaughtering facilities for small-scale poultry producers,
- Lack of serviced land with electricity and water supply for investment of poultry processing facilities
- Small-scale producers have no money to pay muslims slaughters for halaal meat.

CHAPTER THREE

3 RESEARCH METHODOLOGY

The chapter presents study area, research design, data collection and the way the collected data were analysed.

3.1 Study area

The research was carried out in Singida Municipality, Tanzania.

Two wards namely Mandewa nd Mwankoko were selected for data collection from indigenous chicken farmers. The two wards were considered because there are high number of chicken farmer groups and Singida Municipal Council has been supporting them to increase chicken production through ASDP – DADPs projects.

Other respondents of this research namely live chicken wholesalers and retailers; respondents from hotels, restaurants, catering service, supermarkets and butchers were selected from Singida Municipal town where their business activities are based. Livestock officers selected for focus group discussion were from department of Livestock and Fisheries Development in Singida Municipal Council.

Dodoma city was also visited to get experience on chicken processing practices.

3.1.1 Geographical Location

Singida Municipal Council is among of seven District Councils in Singida region located in the central part of Tanzania. It lies between latitudes $4^{\circ}40'$ and $4^{\circ}43'$ South of the equator and longitudes $34^{\circ}30'$ and $34^{\circ}53'$ East of Greenwich.

3.1.2 Land area and population

Singida Municipal Council covers a total land area of 754 km^2 . The size of arable land is 293.5 km^2 , forest area covers 93.5 km^2 and livestock area covers 246.1 km^2 . According to the 2012 population census, Singida Municipal Council had a population of 150,379 people with a population growth rate of 2.71% per year and therefore estimated population in 2022 is 196,478 people.

3.1.3 Climate

Singida Municipality is semi-arid characterized by low rainfall with long period of drought; average annual rainfall ranges between 400 to 600mm per year. Temperature in the area ranges from 11°C to 28.2°C.

3.1.4 Livestock sector

Livestock sample survey carried out in the Municipality in July 2016, which involved more than 6,000 households shows that 50% of the households are engaged in livestock keeping. Common livestock species kept include cattle, goats, sheep, donkey, chicken, ducks, and guinea fowls. Poultry, specifically chicken are leading in population, followed by cattle, goat and sheep (Table 2).

Table 2: Livestock population in Singida Municipality in 2016

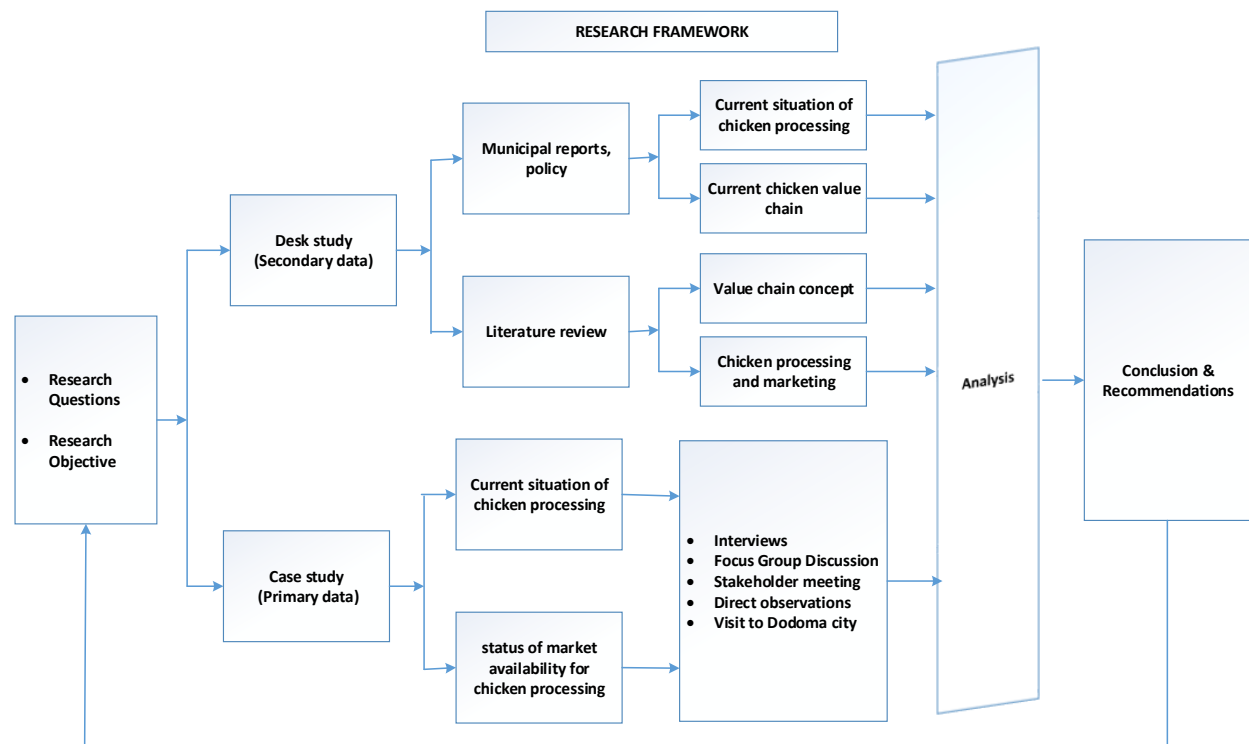
	Cattle	Goats	Sheep	Donkeys	Pigs	Chicken	Dog
Number	38241	36444	13966	606	2406	73893	3951
Percent	22.6	21.5	8.2	0.4	1.4	43.6	2.3

Source: Singida Municipal Council, July 2017

3.2 Research design

This research was a case study with a qualitative approach. Primary data were collected from interviews, Focus Group Discussion (FGD) and Stakeholder meeting while secondary data were obtained from desk study of literature (journals and scientific books), official documents, reports and internet sites. The following research framework (figure 4) below indicated the clear direction of this research.

Figure 4: Research framework



3.3 Data collection methods and sampling techniques

3.3.1 Interview with farmers

Two wards namely Mandewa and Mwankoko were purposely selected for selecting farmers basing on high number of chicken farmer groups present in the named wards (Singida Municipal council, 2017). Total of 10 farmers (5 farmers from each ward) were purposely selected for interview depending on the number of chickens, farmers with above 50 chickens were selected. A checklist was used for interview.

3.3.2 Interview with other stakeholders

Also, other 21 stakeholders from Singida Municipal town were purposely selected for interview; checklists were used. These stakeholders are: 4 traders, 4 wholesalers, 10 retailers (2 live chicken retailers, 3 Supermarkets, 2 Hotels, 2 Restaurants and 1 Catering services) and 3 investors (Butchers).

One (1) focus group discussion (FGD) was conducted with 7 livestock officers of Singida Municipal Council. The discussion focused on opportunities available, constraints and initiatives available for indigenous chicken processing. Checklist was used to collect data from FGD.

One (1) stakeholder meeting of 24 members was conducted and the members were purposely selected depending on much involvement in the chain. The meeting was done at the end after completion of interviews and FGD. The main agendas of the meeting were scoring and ranking of constraints of indigenous chicken processing and listing the roles of each stakeholders in indigenous chicken processing. Stakeholder meeting members were: 2 input suppliers, 7 farmers, 2 traders, 3 wholesalers, 4 retailers, 2 NGO and 4 livestock extension officers.

3.3.3 Direct observations

Observations were done during interview with stakeholders; such observations involved places where chickens are sold and where chickens are slaughtered to get a clear view of current situation.

3.3.4 Desk study

Desk research was done to collect information from literature, various reports and livestock policy for better understanding of the research context and getting secondary data.

3.3.5 Visit to Dodoma city

A visit was done to Dodoma city to get experience on chicken processing practices. Interview was done with Head of Department for Livestock and operators of chicken slaughter facility. Check list was used for interview.

Table 3: Summary of information/data, their sources and method of collection

No.	Sub questions 1	Source of information	Method of data collection
i.	What are the market opportunities available for indigenous chicken processing?	Live chicken wholesalers, live chicken retailers	Interview using checklists
		Livestock officers	Focus Group Discussion
		Farmers	Interview using checklists
		Supermarket, Hotel, Restaurant and catering service	Interview using checklists
		Dodoma city – Head of Department for livestock	Interview using checklists
		Dodoma city – Chicken slaughter facility operators	Interview using checklists
		Dodoma city - Supermarket	Interview using checklists
ii.	What are quality attributes of processed indigenous chickens required?	Live chicken wholesalers, live chicken retailers	Interview using checklists
		Livestock officers	Focus Group Discussion
		Farmers	Interview using checklists
		Supermarket, Hotel, Restaurant and catering service	Interview using checklists
		Dodoma city – Head of Department for livestock	Interview using checklists

		Dodoma city – Chicken slaughter facility operators	Interview using checklists
		Dodoma city - Supermarket	Interview using checklists
	Sub questions 2		
i.	What are the constraints of indigenous chicken processing?	Live chicken wholesalers, live chicken retailers	Interview using checklists
		Livestock officers	Focus Group Discussion
		Farmers	Interview using checklists
		Supermarket, Hotel, Restaurant and catering service	Interview using checklists
		Butchers	Interview using checklists
		Stakeholders	Stakeholders meeting
ii.	What are the current initiatives for indigenous chicken processing?	Live chicken wholesalers, live chicken retailers	Interview using checklists
		Livestock officers	Focus Group Discussion
		Farmers	Interview using checklists
		Supermarket, Hotel, Restaurant and catering service	Interview using checklists
		Butchers	Interview using checklists
		Stakeholders	Stakeholders meeting
		Dodoma city – Head of Department for livestock	Interview using checklists
		Dodoma city – Chicken slaughter facility operators	Interview using checklists
		Dodoma city - Supermarket	Interview using checklists
iii.	What are the stakeholders' roles in indigenous chicken processing?	Stakeholders	Stakeholders meeting

3.4 Data processing and analysis

Information from direct observations, interviews, FGD or stakeholder meeting were transcribed for further analysis.

3.4.1 Interviews and Focus Group Discussion

Qualitative data from interviews and Focus Group Discussion were analysed using “Grounded theory” method whereby chunks of words were coded and categorized into themes and meaningful textual units (Baarda, 2014; Laws et al., 2013).

Also, PESTEC and SWOT analysis tools were used to analyse opportunities and constraints of indigenous chicken processing.

3.4.2 Stakeholders meeting

The information about constraints for indigenous chicken processing from stakeholder meeting was analysed by using ranking and scoring method while the stakeholders' roles were analysed by using stakeholder matrix.

CHAPTER FOUR

4 RESEARCH RESULTS

The following are the research results from observations, interviews, Focus Group Discussion, Stakeholders meeting and a visit to Dodoma city.

4.1 Observations

It was observed that some stakeholders in Singida Municipality have started initiatives of indigenous chicken processing whereby live chicken retailers and catering service providers offer slaughtering service to customers who need slaughtered chickens. However, the environment where chickens are slaughtered is dirty and unhygienic.

Photo 1: Slaughtering of chickens at Singida Municipal central market



Also, live chicken wholesalers transport chickens to Dodoma and Dar es salaam cities by using truck vehicles; chickens are transported in stick cages and truck vehicles have no enough ventilation. This leads to death of chickens during transportation; therefore, chicken processing would rescue this loss by transporting slaughtered chickens.

Photo 2: Chicken transportation to outside Singida region



4.2 Interviews and Focus Group discussion

Interviews were done with individual respondent and the average time for 1 interview was 50 minutes. Focus group Discussion was done with livestock officers and 90 minutes were used for that discussion.

After analysis of the information from interviews and Focus Group discussion, the following results were collected.

4.2.1 Market opportunities available for processed indigenous chickens

The respondents mentioned the following opportunities available for processed indigenous chickens:

- Availability of hotels, restaurants and catering services which require chickens for their customers
- Economic and population growth of people in Singida Municipality
- Geographical location of Singida Municipality connecting to big cities
- Availability of indigenous chicken markets outside Singida region
- Community preference of indigenous chickens
- Availability of locally made animal feed

4.2.2 Quality attributes of indigenous chicken required

The following quality attributes of indigenous chickens were mentioned:

- Indigenous chickens are more required compared to other breeds of chickens
- The range of chicken live weight required is 1.5kg – 2.0kg

4.2.3 Constraints of chicken processing

The following were mentioned as limiting factors of chicken processing in Singida Municipality:

- Lack of chicken slaughtering facility
- Lack of chicken butcher shops
- Inadequate capital to invest in chicken processing
- Inadequate knowledge to stakeholders on chicken processing
- Limited awareness of community on chicken processing
- Inadequate livestock extension officers
- Limited market and market information for processed chickens
- Difficult to get land for construction of chicken slaughter facility due to bureaucracy
- Beliefs of community that frozen chickens are tasteless

4.2.4 Initiatives available for indigenous chicken processing

The following are the initiatives which were mentioned by respondents:

- Planning of indigenous chicken processing project in Singida Municipal's 5 years Strategic Plan (2015 – 2020)
- Identification of Majengo market area by Singida Municipal council for indigenous chicken market and small-scale abattoir construction.
- Slaughtering services of indigenous chickens done at Singida Municipal central market for those customers who need to take slaughtered chickens; price for slaughtering service is Tzsh. 1,000 per chicken.
- Involvement of government institutions (such as VETA Dodoma) to conduct training to stakeholders in Singida Municipality on chicken processing.

Photo 3: Focus Group Discussion with livestock officers



Photo 4: Interview with a farmer



Photo 5: Interview with a butcher



The following PESTEC and SWOT analysis tools (Table 4 and 5) summarize the findings.

Table 4: Analysis of constraints of indigenous chicken processing using PESTEC

Political factors	<ul style="list-style-type: none"> • Inadequate livestock extension officers • Difficult to get land for construction of chicken slaughter facility due to bureaucracy
Economic factors	<ul style="list-style-type: none"> • Lack of chicken slaughtering facility • Lack of chicken butcher shops • Inadequate capital of stakeholders to invest in chicken processing
Social factors	<ul style="list-style-type: none"> • Inadequate knowledge to stakeholders on chicken processing • Limited awareness of community on chicken processing
Technological factors	<ul style="list-style-type: none"> • Limited market and market information for processed chickens
Environmental factors	-
Cultural factors	<ul style="list-style-type: none"> • Beliefs of community that frozen chickens are tasteless

Table 5: Analysis of opportunities and constraints of indigenous chicken processing using SWOT

	Strengths	Weaknesses
Internal factors	<ul style="list-style-type: none"> • Availability of indigenous chickens • Availability of indigenous chicken value chain 	<ul style="list-style-type: none"> • Lack of chicken slaughtering facility • Lack of chicken butcher shops • Inadequate capital of stakeholders to invest in chicken processing • Inadequate knowledge to stakeholders on chicken processing
	Opportunities	Threats
External factors	<ul style="list-style-type: none"> • Availability of hotels, restaurants and catering services which require chickens for their customers • Economic and population growth of people in Singida Municipality • Geographical location of Singida Municipality connecting to big cities • Availability of indigenous chicken markets outside Singida region • Community preference of indigenous chickens • Availability of locally made animal feed 	<ul style="list-style-type: none"> • Inadequate livestock extension officers • Difficult to get land for construction of chicken slaughter facility due to bureaucracy • Limited market and market information for processed chickens • Limited awareness of community on chicken processing • Beliefs of community that frozen chickens are tasteless

4.3 Stakeholders meeting

Stakeholders meeting was conducted to get views and contribution about the constraints for indigenous chicken processing and stakeholders' roles on indigenous chicken processing. The meeting was attended by 23 members whereby 2 groups were made to allow members to discuss and give their views by listing constraints and roles of each stakeholder on indigenous chicken processing. Each group was given 40 minutes to work on sub questions and then 10 minutes for presentation; the presentations were done by means of flip charts. After presentations, members performed scoring and ranking of the listed constraints and came up with ranked constraints and stakeholder matrix for the role of each stakeholder (Table 6 and 7).

Table 6: Scoring and ranking of constraints for indigenous chicken processing

S/No.	Constraints	Score	Rank
1.	Inadequate capital to invest in chicken processing	4	3
2.	Inadequate knowledge on chicken processing	3	4
3.	Limited market and market information for processed chickens	1	6
4.	Inadequate livestock extension officers	2	5
5.	Lack of chicken slaughter facility/abattoir	8	1
6.	Lack of chicken butcher	5	2
	Total	23	

Table 7: Stakeholders matrix for roles on indigenous chicken processing

S/No.	Stakeholder	Roles
1.	SIDO	<ul style="list-style-type: none">- Designing and making equipment such as incubators and chicken processing machines- Conducting chicken processing trainings to stakeholders and providing financial support
2.	Livestock extension officers	<ul style="list-style-type: none">- Providing extension services and awareness on chicken processing
3.	Chicken farmers	<ul style="list-style-type: none">- Chicken productions under proper husbandry to satisfy the market

S/No.	Stakeholder	Roles
4.	Livestock input suppliers	- Distribution of day old chicks, vaccines and drugs
5.	Government (Singida Municipal Council)	- Organize stakeholders for indigenous chicken abattoir and butcher construction - Allocation of investment areas for chicken abattoir - Employment of livestock extension officers
6.	Chicken retailers, wholesalers and butcher operators/investors	- Look for chicken reliable markets - Investing in indigenous chicken processing and abattoir
7.	Institutions (NGOs, VETA, SEMA, BRAC, Microfinances)	- Financial support to stakeholders - Awareness creation and knowledge delivery on chicken processing
8.	Supermarkets, hotels, restaurants	- Selling quality and desired chicken to customers - Maintaining cold chain during chicken storage

Photo 6: Presentation during stakeholder meeting



Photo 7: Group photo during stakeholder meeting



4.4 Visit to Dodoma city

The researcher visited Dodoma city to get experience on chicken processing and to learn about strategies which were used to implement chicken processing practices. The information was collected by interviewing head of Department for Livestock of Dodoma city council, chicken abattoir operators and 1 supermarket owner. Also, direct observation was done in the abattoir and supermarket.

4.4.1 Interview with Head of Department for Livestock

The following information was obtained:

- Chicken abattoir was constructed in Dodoma central market in 2016; It is 20m long and 15m wide with capacity of slaughtering 500 chickens per day. It has 1 gas cooker for scalding and 1 plucking machine with capacity of 6 chickens.
- The idea was initiated by Department of Livestock and then was planned in the budget through Dodoma City Council own source.
- Total of Tzsh. 60,000,000 were used for construction and installation of chicken processing equipment in the abattoir.

Photo 8: Front view of chicken abattoir in Dodoma city



4.4.2 Interview with chicken abattoir operators (A group of live chicken retailers)

The following information was obtained:

- The abattoir is operated by a group of live chicken retailers with 30 members
- 600 chickens are slaughtered per day and Tzsh. 500 are paid per 1 slaughtered chicken
- Customers include: Live chicken retailers, individual people, hotels, restaurants, supermarkets who bring chickens for slaughter and take them away. The abattoir has no storage equipment for slaughtered chickens.
- The abattoir has a total of 8 workers

Photo 9: Inside appearance of the chicken abattoir at Dodoma central market



4.4.3 Interview with Faraja supermarket owner

The following information was obtained:

- Buys live chickens from Dodoma central market and process them at the chicken abattoir
- Average of 50 chickens are sold per day and the main customers are individual people, hotels and restaurants
- The price is Tzsh. 10,000 per 1kg of chicken
- Many customers require indigenous chickens which are in cuts

Photo 10: Chicken sold in the Faraja supermarket, Dodoma city



4.4.4 Lessons learned from visit to Dodoma city

Dodoma city has made a step ahead of Singida Municipality in chicken processing practices. The following were points noted by the researcher as far as chicken processing is concerned in Dodoma city:

- There are initiatives done by the government (Dodoma city council) to establish chicken slaughtering/processing facility through own source funds.
- There is successful collaboration between government and a group of live chicken retailers (private sector - PPP) for sustainable implementation of chicken processing practices. However, chicken farmers and traders are not involved in this partnership.
- There is good management of the slaughter facility; slaughtering service fee is collected and 20% collection per month is paid back to Dodoma City council to cover the construction costs.
- There are many chickens for slaughter compared to small slaughtering capacity of the facility; there was poor estimation of chicken slaughtering requirements during construction.
- There are no chicken butcher shops which could bring more chicken customers in the chain.

CHAPTER FIVE

5 DISCUSSION

According to information collected from interviews with farmers, live chicken retailers and wholesalers, chickens in Singida Municipality are mostly sold live except for catering services who sell slaughtered chickens to customers in some few cases. Chickens at Singida Municipal central market are also sold live though some customers need slaughter services. Generally, chickens at the central market are slaughtered in unhygienic environment and without meat inspection by livestock officers which can be harmful to chicken consumers as well as poor quality of chicken meat (Photo 1). It was also found that no processed chickens are sold in supermarkets and butcher shops. This scenario was also reported by Bwalya (2014).

In comparison, Dodoma Municipality has made a step ahead in chicken quality. Slaughtering of chickens is done in abattoir and chicken meat hygiene is well controlled. Also, in Dodoma Municipality processed chickens are sold in supermarkets thus customers of middle and high-income categories are included in the chicken value chain (Photo 8,9 and 10).

5.1 Opportunities available for indigenous chicken processing

The results of this study indicate that owners of hotels, restaurants and catering service buy live chickens from markets and slaughter at their working places. These stakeholders are not happy with such situation since it cost them to hire someone to slaughter chickens and to dispose the wastes. Therefore, it is an opportunity for a slaughter facility to supply processed chickens to the named chicken retailers.

Singida Municipality is a fast-growing town with estimated population of 196,478 people by 2022 compared to 150,379 people in 2012 (Singida Municipal Council, 2017). Increase in population means more requirement of food for people which is an opportunity for chicken production and processing.

Geographical location of Singida Municipality as it is situated in central Tanzania and a junction for big cities and towns such as Dar es salaam, Dodoma, Mwanza and Arusha would be an opportunity for indigenous chicken processing since various people currently passing through Singida Municipality collect live chickens.

Risk of transporting live chickens outside Singida region. Live chicken wholesalers who transport indigenous chickens outside Singida reported loss of chickens due to deaths during transportation. It

was also reported by RLDC (2009) on transportation of indigenous chickens from rural areas to urban does not consider animal welfare and animal health concerns; about 5% of chickens die during transportation. This challenge is an opportunity for indigenous chicken processing if the stakeholders are convinced to slaughter and transport processed chickens rather than transporting live chickens.

Availability of indigenous chicken markets outside Singida region such as Dodoma and Dar es salaam cities is an opportunity for processed chickens from Singida Municipality. The report by FAO (2015) revealed that some of chickens which are transported from various regions of Tanzania (including Singida region) to Dar es salaam are slaughtered at Kisutu market in Dar es salaam. Also, during this study the researcher experienced that Dodoma central market has a chicken slaughter facility which slaughter chickens collected from other regions including Singida; these two cities will be markets for Singida Municipality once chicken processing practice is introduced.

5.2 Quality attributes of processed chickens required

Indigenous chickens were reported to be more preferred by customers compared to other types of chickens such as cross-breeds. This preference is due to perceived good taste, toughness and naturalness; indigenous chickens are considered to grow in a natural environment with no chemical fed to them and are not genetically manipulated (Kyarisiima et. al., 2011). Moreover, 80% of chicken consumers prefer indigenous chickens and pay triple price of exotic chickens (Kyarisiima et. al., 2011; Queen et. al., 2016).

Chicken retailers mentioned preference of indigenous chickens in terms of live weight to be 1.5kg and 2kg. This could be due to low purchasing power of many customers; the smaller the chicken the lower the price. According to Mwalusanya et. al. (2002) the mean live weight of indigenous chickens is 1948g (1.95kg) and 1348g (1.35kg) for cocks and hens respectively. Therefore, the reported live weight of indigenous chickens is not very much different from the weight of chickens preferred by customers and hence customers will continue buying indigenous chickens.

5.3 Constraints of chicken processing

Respondents from hotels and restaurant believe that storage of chicken in refrigerator affect quality and taste of chickens; therefore, they prefer to cook neither chilled nor frozen chickens. This belief is contrary to the principles of meat hygiene which require meat to be chilled immediately after inspection and then deep freeze if long storage is required. After slaughter, chicken carcasses are chilled at 4°C for 2 - 6 hours to slow down rigor mortis, reduce growth of microorganisms and evaporative weight loss (Barbut, 2016; Brown et.al., 2009). Fast chilling after slaughter improves meat quality by reducing

occurrence of pale soft exudative meat, improving lean meat colour and water - holding capacity (Adzitey & Nurul, 2011).

Lack of chicken slaughter facility in Singida Municipality was mentioned by respondents as the major constraint for chicken processing. Butcher shops and supermarket owners mentioned unavailable source of slaughtered chickens as a reason to why processed chickens are not retailed in butcher shops and supermarkets. The practices of chicken slaughtering done at the Singida Municipal central market is not good for value added chickens to be retailed in butcher shops and supermarkets; that premise is dirty, unhygienic, and not registered for meat production. According to Great Eastern Abattoir (2015), an abattoir is a special facility designed and licensed for receiving, holding, slaughtering and inspection of meat animals and meat products before are released to the public. The main objective of the abattoir is to ensure that meat from animals are free from diseases, are wholesome and of no risk to human health. The slaughtering facility also play an important role in poultry sector, economic development, food safety and hygiene standards (Dyaranto et. al. 2014). Mlau et. al. (2017) also reported lack of poultry slaughtering and processing facilities in Tanzania, which is characterized by weak biosafety and HACCP procedures. However, they proposed the strategy to mitigate such challenge as institutionalization of mandatory biosafety and HACCP procedures.

Respondents mentioned lack of chicken butcher shops as another major constraint for chicken processing in Singida Municipality. Residents in this Municipality depend on butcher shops to buy fresh meat and fish; therefore, butcher shops can be economic viable for selling processed chickens. In Singida Municipality, there are registered butcher shops which meet standards set by the government under Tanzania Food and Drug Act No. 1 of 2003; the butcher shops are clean with refrigerators and deep freezers for meat storage as well as recognized butcher shop operator personnel (Photo 5). According to the interview done with butchers, they are encouraged and ready to operate chicken butcher shops, the problem is the lack of processed chicken sources (slaughter facility) and limited capital to invest in chicken cold storage equipment.

Stakeholders mentioned inadequate capital as a barrier to invest in chicken processing. It was reported by FAO (2015) that some broiler producer enterprises in Tanzania have managed to make small – scale chicken processing facilities (Table 1). The stakeholders mentioned limited capital to invest in indigenous chicken processing due to inability to meet microfinance loan conditions. Most microfinance institutions require collateral such as house before processing a loan; this condition can be difficult for small – scale

entrepreneurs to access the loan. The study by Nguyen (2010) reported that micro financial institutions hesitate to give loan to poultry stakeholders due to risk as agro-climatic risks such as diseases, unstable market, food safety as well as lack of information and forecasting in agriculture.

Inadequate knowledge on chicken processing was also mentioned as a constraint. This reveals that extension services from livestock officers is not enough. Most respondents during interview had limited understanding on chicken processing except to some stakeholders such as live chicken wholesalers who were offered trainings by VETA Dodoma. The agricultural extension services in Tanzania is mainly offered by extension officers employed by the government and they visit farmers or other stakeholders to their locality. However, this type of extension services face number of challenges such as few numbers of extension officers and limited resources such as transport (Sanga et. al., 2013). Therefore, innovation on extension service delivery is mandatory to insure knowledge dissemination to indigenous chicken stakeholders. The use of Information, Communication and Technologies (ICTs – radios, mobile phones, digital recorder and computers) by extension officers is required to perform knowledge delivery at minimum efforts (Kapinga, 2009).

Stakeholders mentioned market and market information access as limiting factors for indigenous chicken processing. Limited information about markets may be the reason to why stakeholders in Singida Municipality hesitate to engage in indigenous chicken processing. Market information such as location of the market, types of products required in the market and rules and regulations governing the market are important requirements prior to establishing business. Therefore, physical infrastructures for Information, Communication and Technology (ICT) such as use of communication media like radios, television, mobile phones and newspapers need to be improved to connect stakeholders to markets (IFAD, 2011; Magesa et. al., 2014; Magesa et. al., 2015).

5.4 Initiatives for indigenous chicken processing

Besides underdevelopment of chicken processing in Singida Municipality, some initiatives have been done by various stakeholders to initiate this practice. The information collected during this study indicate that both government and private sectors have noticed a need of chicken slaughtering services in Singida Municipality. For example:

- Singida Municipal Council had foreseen this before and planned it in its 5 years Strategic Plan for 2015 – 2020; up to 2018 Singida Municipal Council has identified Majengo area for chicken market and construction of small – scale chicken abattoir (Singida Municipal Council, 2017).

Also, trainings on chicken processing conducted to live chicken wholesalers by government institution (VETA Dodoma) indicate the awareness of government on the need of chicken processing in Singida Municipality.

- Poor slaughtering service of chicken offered at Singida Municipal central market is an initiative done by live chicken retailers to help customers who need to take slaughtered chickens. This is also an evidence that there is a need of chicken processing.

5.5 Roles of stakeholders on indigenous chicken processing

It is crucial for every stakeholder to do his/her roles and obligations for success of any industry. During stakeholder meeting, various stakeholders identified constraints for chicken processing in Singida Municipality and later every stakeholder was given roles to perform. Involvement of all chicken value chain stakeholders is a good approach for introduction and sustainability of indigenous chicken processing. The roles were given to each stakeholder as per their interest, power, resource base and technical skills they have (Sanga et. al., 2013).

CHAPTER SIX

6 CONCLUSION AND RECCOMENDATIONS

6.1 Conclusion

6.1.1 Opportunities available for indigenous chicken processing

In Singida Municipality chickens are sold live from farm level to urban markets. Chicken customers namely: individual people, hotels, restaurants and catering service providers buy live chickens and slaughter them at home or at their working places except for few cases where customers are given slaughter services at Singida Municipal central market and other customers buy slaughtered chickens from catering service providers. The current chicken slaughtering service given at the Singida Municipal central market is underdeveloped with dirty environment and not safe for human health. This situation is an opportunity for indigenous chicken processing due to availability of customers who need slaughtered chickens. Other opportunities for indigenous chicken processing in Singida Municipality include: Population increase leading to more food requirement including chickens, geographical location being in central zone connecting to big cities such as Dar es salaam, Dodoma, Mwanza and Arusha is opportunity for indigenous chicken market outside Singida region.

6.1.2 Quality attributes of processed chickens required

Customers require indigenous chickens of live weight 1.5kg to 2.0kg. Preference of indigenous chickens by many customers is also opportunity and a message to farmers and government to put more efforts in indigenous chicken production.

6.1.3 Constraints of chicken processing

Besides opportunities available for indigenous chicken processing, there are constraints which limit development of indigenous chicken processing in Singida Municipality. Such constraints include: Lack of chicken slaughter/processing facility which could be the source of processed chickens to hotels, restaurants, supermarkets and butcher shops. Inadequate capital to stakeholders is another barrier towards indigenous chicken processing for construction of chicken slaughter facility and establishment of chicken butcher shops. Community awareness on chicken processing is till low and the prevailing beliefs that chilled or frozen chickens lose taste can be an obstacle to chicken processing development and advocacy. Market and market information access for processed chickens are also burning issues; stakeholders have no enough information about availability of market, rules and regulations of processed chicken markets outside Singida region.

6.1.4 Initiatives for indigenous chicken processing

Indigenous chicken processing practices in Singida Municipality is still underdeveloped and unformalized regardless many opportunities available for indigenous chicken processing. However, It is clearly observed that stakeholders in Singida Municipality have already foreseen a need to introduce indigenous chicken processing. A step taken by Singida Municipal Council to allocate an activity of chicken processing in its 5 years strategic plan (2015 – 2020) and identification of Majengo area for chicken slaughter facility construction are evidence that initiatives have been done. Also, trainings on indigenous chicken processing which have been offered to live chicken wholesalers by VETA Dodoma is a stimulant to awareness and advocacy of chicken processing practices to the community. In comparison, Dodoma city have made a step ahead of implementing chicken slaughter processing. The city council allocated Tzsh. 60,000,000 for construction of chicken slaughter facility and installation of important equipment; stakeholders are also involved and take responsibilities of operating the facility.

6.2 Recommendations

In order to achieve implementation of indigenous chicken processing practices in Singida Municipality, the following recommendations should be observed by each stakeholder.

6.2.1 Recommendations to Singida Municipal Council

Singida Municipal council is a supporter and a regulator of indigenous chicken value chain. In order to achieve establishment of indigenous chicken processing, the following are recommended:

- To strengthen livestock extension services by establishing Farmers Field Schools (FFS) for easy dissemination of knowledge to indigenous chicken farmers to attain optimal productions.
- To use Information, Communication and Technology (ICT) methods such as radios, televisions, newspapers and leaflets for awareness creation and advocacy on chicken processing to Singida Municipal community. A local radio in Singida Municipality known as “Standard Radio” should be used effectively to convey such information to community.
- To make sure that the planned intervention in the 5 years strategic plan (2015 – 2020) of chicken processing establishment is implemented and the identified area (Majengo) is used for construction of chicken slaughtering facility. This activity should be done in partnership with other actors (farmers, live chicken traders, wholesalers and retailers) as Public Private Partnership to enhance involvement for sustainability of the project.

- To encourage butchers to incorporate processed chickens in their businesses. Butcher shops are sources of meat and fish for the community, also they can be used to supply processed chickens to the community.
- To visit chicken slaughtering place at Singida Municipal central market and give technical advice on proper chicken slaughtering practice according to the laws and regulations for safety of chicken consumers and environment.
- To collaborate with other government institutions (VETA, SIDO) and Non-Governmental Organizations (NGO) such as SEMA and BRAC in implementation of indigenous chicken processing interventions. These institutions were mentioned by stakeholders to support them in terms of trainings and microfinance support.
- To mobilize some representatives of indigenous chicken value chain stakeholders (Farmers, chicken wholesalers, retailers and livestock officers) to visit Dodoma central market to get experience on chicken slaughtering services going on there.

6.2.2 Recommendations to farmers

Preference of indigenous chickens by many customers is opportunity to farmers to produce more indigenous chickens for market satisfaction. Farmers should consider indigenous chicken production as an important economic activity rather than keeping chickens for home consumption. In order to access good market and to benefit from indigenous chicken processing, farmers are advised to work in groups. This will enable them to look for good markets, increase their bargaining power as well as easy access of extension services.

6.2.3 Recommendations to farmers, live chicken traders, live chicken wholesalers and live chicken retailers

Currently, these are active actors in indigenous chicken value chain in Singida Municipality in a sense of farm to market relationship. They are advised to form a cooperative society which will work as a private organization to collaborate with government in establishment of indigenous chicken processing through Public Private Partnership (PPP). In this partnership, the cooperative society will be operators of chicken slaughtering/processing facility, to find markets for processed chickens as well as establishment of chicken butcher shops. Stakeholders are advised to use modern way of communications by using ICTs methods such as radio, television, mobile phones and reading newspapers to get market information.

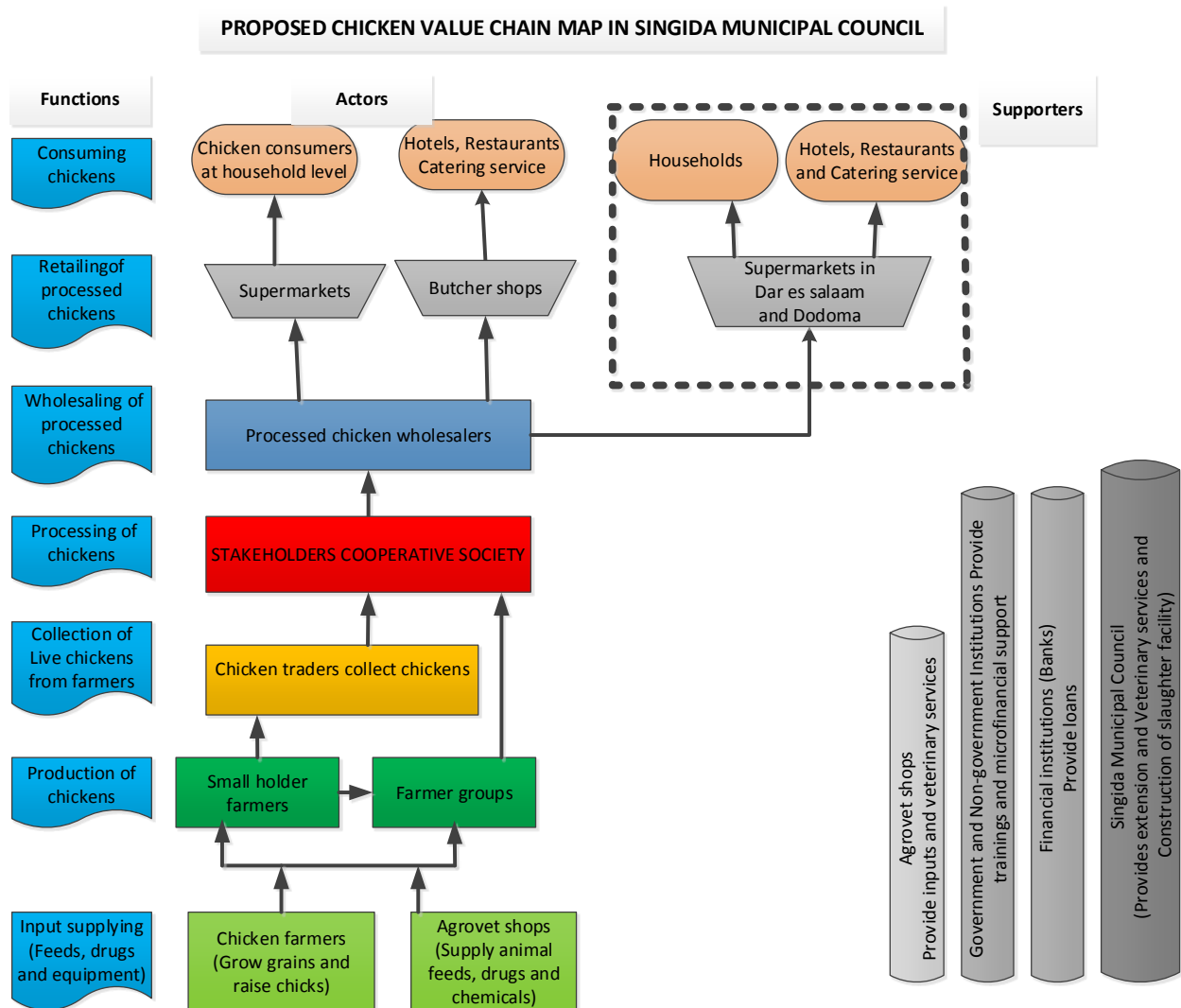
6.2.4 Further research recommendations

Feasibility study (cost – benefit analysis) including chicken slaughter facility design should be done in Singida Municipality.

6.2.5 Proposed indigenous chicken value chain map

Farmers are advised to form groups which will cooperate with chicken traders and wholesalers to make a cooperative society. The later may get loan from financial institution or collaborate with the government to construct chicken slaughter facility. Farmer groups will collect chickens from group members and take them to slaughter facility after which slaughtered chickens will be sold to chicken wholesalers. Also, chicken traders may collect chickens from individual farmers or from local markets and take them to slaughter facility after which slaughtered chickens will be sold to chicken wholesalers. Chicken wholesalers will sell slaughtered chickens to local retailers such as supermarkets and butcher shops and transport other slaughtered chickens outside Singida region to Dar es salaam and Dodoma. Chicken slaughter facility will be operated by the Cooperative Society in collaboration with the government for expertise. The following is the proposed indigenous chicken value chain map as shown in figure 5.

Figure 5: Proposed indigenous chicken value chain map



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ANNEXES

ANNEX 1: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH FARMERS

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
02 July 2018	1. Mr. Mallya	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - Farm size is 191 chickens - He understands chicken processing as selling slaughtered chickens in shops - Some of his customers require slaughtered chickens; he slaughter some chickens at home and sell to hotels and restaurants; About 25% are slaughtered. - Customers pay Tzsh. 500 extra for slaughter
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Only indigenous chickens are required - Customers require slaughtered whole chickens
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Inadequate capital to buy plucking machine - Inadequate knowledge on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - He has already started selling some slaughtered chickens
		i. What are the	a. Understanding of	<ul style="list-style-type: none"> - Farm size is 90

	2. Jumanne Shaban	opportunities available for indigenous chicken processing?	indigenous chicken processing	<ul style="list-style-type: none"> - chickens - He does not understand chicken processing.
			b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - No customers require slaughtered chickens; he sells live chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Only indigenous chickens are required
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	Inadequate knowledge on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiatives mentioned
	3. Erick Sombi	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - Farm size is 52 chickens - He understands chicken processing as slaughtering chickens in special places and packaging chicken for selling - He sells live chickens to traders
		ii. What are the quality attributes of processed indigenous chickens	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Only indigenous chickens are required -

03 July 2018		required?		
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital and land for slaughter construction
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	NGO known as SEMA conducted chicken processing training to his group
	4. Debora Issa	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- Farm size is 68 chickens - She understands chicken processing as taking chickens to special abattoir like cattle and goats. - She sells live chickens to traders and neighbours
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Only indigenous chickens are required -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate financial support - Less community awareness on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	NGO known as SEMA conducted chicken processing training to her group
	5. Mariam Jumanne	i. What are the opportunities available for	a. Understanding of indigenous chicken processing	- Farm size is 108 chickens - She does not understand

		indigenous chicken processing?	b. Availability of customers requiring processed chickens	chicken processing. - She sells live chickens to local markets
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Only indigenous chickens are required -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate knowledge on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiatives mentioned
04 July 2018	6. Ephraim Yotamu	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- Farm size is 54 chickens - He has good understanding on chicken processing as selling packaged chickens in shops - He sells live chickens to local markets
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- His customers prefer indigenous chickens -
		i. What are the constraints of indigenous chicken	Limiting factors to introduce processing of chickens	- No financial support to farmers - No chicken abattoir

		processing?		
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- NGO known as SEMA conducted chicken processing training to his group
	7. Susan Kitua	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- Farm size is 187 chickens - She does not understand chicken processing - She sells live chickens to hotels, cafeteria and neighbours
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Her customers take both indigenous chickens and crossbreed chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Limited awareness on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative mentioned
	8. Ibrahimu Shaban	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	- Farm size is 65 chickens - He has good understanding on chicken processing as slaughtering chickens in special place under government control. - He sells live chickens to local

			b. Availability of customers requiring processed chickens	markets and traders
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- His customers prefer indigenous chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Limited access to markets
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	NGO known as SEMA conducted chicken processing training to his group
05 July 2018	9. Hamis Simba	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- Farm size is 57 chickens - He does not understand chicken processing - He sells live chickens to local markets
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- His customers prefer indigenous chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Community does not understand chicken processing - Limited extension services
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative mentioned

	10. Athuman Ramadhan	i. What are the opportunities available for indigenous chicken processing?	<p>a. Understanding of indigenous chicken processing</p> <p>b. Availability of customers requiring processed chickens</p>	<ul style="list-style-type: none"> - Farm size is 75 chickens - He understands chicken processing as slaughtering chickens in large quantity and selling in shops - He sells live chickens to hotels
		ii. What are the quality attributes of processed indigenous chickens required?	<p>a. Breed of chickens required</p> <p>b. State of processed chickens (whole chicken or cuts)</p>	<ul style="list-style-type: none"> - His customers prefer indigenous chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Limited financial support to establish chicken slaughter place
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	NGO known as SEMA conducted chicken processing training to his group

ANNEX 2: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH LIVE CHICKEN WHOLESALERS

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
06 July 2018	1. Mkotya Msidada	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- He transports about 3,000 live chickens per month to Dar es salaam - He understands chicken processing as slaughtering chickens in special place controlled by livestock experts and selling chickens in supermarket
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Only indigenous chickens are required -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital to invest in processing (Slaughter house, meet transportation trucks) - Inadequate knowledge on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- VETA from Dodoma conducted training on chicken slaughter and processing
	2. Wodi Rajabu	i. What are the opportunities available for	a. Understanding of indigenous chicken processing	- He transports about 4,000 live chickens per month to Dodoma

09 July 2018		indigenous chicken processing?	b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - and Dar es salaam - He has good understanding chicken processing slaughtering chickens in abattoir and selling packaged chicken in shops - Some of his customers require slaughtered chickens.
		ii. What are the quality attributes of processed indigenous chickens required?	<ul style="list-style-type: none"> a. Breed of chickens required b. State of processed chickens (whole chicken or cuts) 	<ul style="list-style-type: none"> - Indigenous chickens and crossbreed chickens are required
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Inadequate knowledge on chicken processing - Limited awareness to chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	VETA from Dodoma conducted training on chicken slaughter and processing
	3. Zuberi Khalid	i. What are the opportunities available for indigenous chicken processing?	<ul style="list-style-type: none"> a. Understanding of indigenous chicken processing b. Availability of customers 	<ul style="list-style-type: none"> - He transports about 2,000 live chickens per month to Dar es salaam - He has good understanding on chicken processing as slaughtering chickens at

			requiring processed chickens	government abattoir like cattle and sheep
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Only indigenous chickens are required -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital for investment - Government does not participate in value addition - Difficult to get land for building slaughter facility
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	VETA from Dodoma conducted training on chicken slaughter and processing
09 July 2018	4. Anicet Mayo	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- He transports about 1,500 live chickens per month to Dar es salaam and Dodoma - He has good understanding on chicken processing as selling packaged chicken in shops and supermarkets -
		ii. What are the quality attributes of processed	a. Breed of chickens required b. State of processed	- Only indigenous chickens are required

		indigenous chickens required?	chickens (whole chicken or cuts)	-
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Inadequate capital for investment - Government does not participate in value addition - Limited extension services from government
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - No initiative mentioned

ANNEX 3: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH CHICKEN RETAILERS

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
10 July 2018	1. Shaban Mahiki (Live chickens)	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He sells about 280chickens - He has good understanding on chicken processing slaughtering chickens under control of government in abattoir and selling chickens in shops - Some of his customers require slaughtered chickens; he slaughter some chickens at the

			b. Availability of customers requiring processed chickens	central market sell to hotels, restaurants and individuals; About 30% are slaughtered. - Customers pay Tzsh. 1,000 extra for slaughtering services
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Both indigenous and crossbreed chickens are required - Customers require slaughtered whole chickens
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital to buy processing facilities - Unavailable space
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- He has already started selling some slaughtered chickens - VETA from Dodoma conducted training on chicken slaughter and processing
	2. Abdul Hassan (Live chickens)	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers	- He sells about 300chickens per month - He does not understand chicken processing - Some of his customers require slaughtered chickens; he

			requiring processed chickens	<p>slaughter some chickens at the central market sell to hotels, restaurants and individuals; About 25% are slaughtered.</p> <ul style="list-style-type: none"> - Customers pay Tzsh. 1,000 extra for slaughtering services
		ii. What are the quality attributes of processed indigenous chickens required?	<p>a. Breed of chickens required</p> <p>b. State of processed chickens (whole chicken or cuts)</p>	<ul style="list-style-type: none"> - Only indigenous chickens are required - Customers require slaughtered whole chickens
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Inadequate capital for investment - Difficult to get land for investment
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - He has already started selling some slaughtered chickens
11 July 2018	3. Up to date shopping center (Supermarket)	i. What are the opportunities available for indigenous chicken processing?	<p>a. Understanding of indigenous chicken processing</p> <p>b. Availability of customers requiring processed chickens</p>	<ul style="list-style-type: none"> - She does not sell chickens - She does not understand chicken processing. - Some customers ask for slaughtered chickens
		ii. What are the quality attributes of processed indigenous	<p>a. Breed of chickens required</p> <p>b. State of processed chickens (whole</p>	<ul style="list-style-type: none"> -

		chickens required?	chicken or cuts)	-
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Unavailable processed chickens - Lack of slaughtering facility
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned
	4. Bafitino Supermarket	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He does not sell chickens - He has good understanding on chicken processing as packaging and selling chickens in supermarkets and shops
			b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - Some customers need chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Processed chickens are not available - There is no abattoir for chickens - Government does not make people aware of processed chickens

		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	He heard trainings on chicken value addition by Municipal Council to farmers
	5. VM Shopping mall supermarket	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- He does not sell chickens - He has no good understanding on chicken processing. - Customers ask for chickens, but he has no cold facilities to keep chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital to buy cold facilities for chickens - Unavailable processed chickens - Lack of slaughtering facility
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned
12 July 2018	6. Regency Hotel	i. What are the opportunities available for indigenous chicken	a. Understanding of indigenous chicken processing	- He sells about 25 chickens per day - He does not understand chicken processing

		processing?		<ul style="list-style-type: none"> - The hotel gets live chickens from central market and slaughtering is done at the hotel - He complains that it is difficult to do slaughter at the hotel premises and he pays someone Tsh 500 per slaughtered chicken
			b. Availability of customers requiring processed chickens	
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - His customers prefer indigenous chickens due to good taste -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - There is no special market for slaughtered chicken
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative mentioned
	7. KBH hotel	i. What are the opportunities available for indigenous chicken	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He sells about 20 chickens per day - He does not understand chicken processing - The hotel gets

		processing?		slaughtered chickens from central market. But the slaughtering place at the central market is not good
			b. Availability of customers requiring processed chickens	
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- His customers prefer indigenous chickens due to good taste and yellowish skin colour - The hotel gets slaughtered whole chickens and cutting is done at the hotel
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- There is no reliable place to get slaughtered chickens
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- There is established slaughtering place at central market, though it is dirty
13 July 2018	8. Kijanga café (Restaurant)	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	- He sells about 12 chickens per day - He does not understand chicken processing - The cafeteria gets slaughtered chickens from central market.

			b. Availability of customers requiring processed chickens	-
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Customers prefer indigenous chickens - The cafeteria gets slaughtered whole chickens and cutting is done at the cafeteria
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Absence of government slaughtering facility - No investors to establish slaughtering facilities
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - There is small slaughtering place at central market, it is not enough
	9. Razaki Lunch Corner (Restaurant)	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - The cafeteria sells about 28 chickens per day - He does not understand chicken processing. He thinks frozen chickens are not good - The cafeteria gets live chickens from central market. Slaughtering is

			b. Availability of customers requiring processed chickens	done at the cafeteria.
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Customers prefer indigenous chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Religious believes; Islamic people need chickens to be slaughtered by an Islamic person and not in abattoir.
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- No initiative was mentioned
	10. Mr. Ramadhan (Catering service)	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring	- This place sells about 40 chickens per day - He does not understand chicken processing. He gets live chickens from central market and local markets. Slaughtering is done at the working place. -

			processed chickens	
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Customers prefer both indigenous and crossbreed chickens -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Religious believes; Islamic people need chickens to be slaughtered by an Islamic person and not in abattoir.
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- No initiative was mentioned

ANNEX 4: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH LIVE CHICKEN TRADERS

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
16 July 2018	1. Jumannne Kimu	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	- He collects live chickens from farmers and local markets and sell to live chicken whole salers - He does not understand chicken processing. - His customers buy live chickens.
		ii. What are the	a. Breed of chickens	- Indigenous

		quality attributes of processed indigenous chickens required?	b. State of processed chickens (whole chicken or cuts)	chickens are required by customers -
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- There are no customers for processed chickens - People are not aware of processed chickens
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- No initiative was mentioned
	2. Jairosi Kepha	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	- He collects live chickens from local markets and sell to live chicken whole salers - He understands chicken processing as slaughtering of chickens in government abattoir. - His customers buy live chickens.
			b. Availability of customers requiring processed chickens	
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Indigenous chickens are required by customers -
		i. What are the constraints of	Limiting factors to introduce processing	- There are no customers for

17 July 2018		indigenous chicken processing?	of chickens	<ul style="list-style-type: none"> - processed chickens - Extension officers do not educate the society on processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned
	3. Zebitus Anold	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He collects live chickens from markets and sell to whole salers in town - He understands chicken processing as selling chickens in hotels. - His customers buy live chickens
			b. Availability of customers requiring processed chickens	
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Indigenous chickens are required - Only live chickens are sold
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - There is no place to slaughter chickens - People are not aware to buy slaughtered chickens
		ii. What are the current initiatives for indigenous	Any initiatives	No initiative was mentioned

		chicken processing?		
	4. Tito Kagise	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - He collects live chickens from farmers and sell to whole salers - He understands chicken processing as slaughtering chickens in abattoir like cattle. - His customers buy live chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Indigenous chickens are required by customers <p>Only live chickens are sold</p>
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - There is no abattoir for chickens like cattle - People are not ware about chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned

ANNEX 5: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH BUTCHERS

DATE	RESPONDENTS	RESEARCH	CHECKLISTS	TRANSCRIPTIONS
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		QUESTIONS		
18 July 2018	1. Mr. Kasimu	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He sells beef and goat meat - He has good understanding on chicken processing as slaughtering chickens in special abattoir and package chicken for selling in shops - Some of his customers ask for slaughtered chickens.
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	-
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - There is no slaughtering abattoir for chickens - There is no reliable centered market for chickens - Costs of buying cold facilities for beef and slaughtered chickens his high
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- No initiative was mentioned
	2. Issa salum	i. What are the opportunities available for indigenous chicken	a. Understanding of indigenous chicken processing	<ul style="list-style-type: none"> - He sells beef, goat and sheep meat - He has good understanding on chicken

		processing?	b. Availability of customers requiring processed chickens	processing. - Some of his customers require slaughtered chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	-
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital for investing in both beef and slaughtered chickens - Difficult to get chickens for slaughter. There is no specific market and abattoir for chickens
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	- No initiative was mentioned
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Unavailable processed chickens - Lack of slaughtering facility
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned
	3. Eliud Lymo	i. What are the opportunities available for indigenous chicken processing?	a. Understanding of indigenous chicken processing	- He sells beef meat - He has good understanding on chicken processing as slaughtering chickens in government abattoir and selling

19 July 2018			b. Availability of customers requiring processed chickens	chickens in shops - No customers ask for slaughtered chickens
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	-
		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	- Inadequate capital for investing in both beef and slaughtered chickens - Many people are not aware to buy slaughtered chickens from butchers - There is no specific abattoir for chickens
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	No initiative was mentioned

ANNEX 6: CHECKLISTS AND TRANSCRIPTIONS OF FGD WITH LIVESTOCK OFFICERS

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
24 July 2018	Focus Group Discussion with 7 livestock officers	i. What are the opportunities available for indigenous chicken processing?	<p>a. Understanding of indigenous chicken processing</p> <p>b. Availability of customers requiring processed chickens</p>	<ul style="list-style-type: none"> - Livestock officers explained chicken processing as value addition of chickens by slaughtering chickens in hygienic environment and then packaging. - They elaborated on economic growth and status of Singida Municipality, increased population and geographical location of Singida municipality, available markets outside Singida region, availability of animal feeds, availability of hotels and restaurants as opportunities for processed chickens.
		ii. What are the quality attributes of processed indigenous chickens required?	<p>a. Breed of chickens required</p> <p>b. State of processed chickens (whole chicken or cuts)</p>	<ul style="list-style-type: none"> - They mentioned indigenous chickens being more preferred than cross breed chickens - Some chicken retailers who have started selling slaughtered chickens they sell whole slaughtered chickens

		i. What are the constraints of indigenous chicken processing?	Limiting factors to introduce processing of chickens	<ul style="list-style-type: none"> - Absence of slaughter facility in the Municipality - Inadequate capital of many stakeholders to invest in chicken processing - Limited awareness of people on chicken processing
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - Chicken retailers at the Municipal central market has started slaughtering of chickens though in unhygienic environment - Some catering service providers slaughter and sell raw chickens to customers - Singida Municipal Council has planned indigenous chicken value addition in the 5-year strategic plan (2015 – 2020) and in 2018 the Municipal Council has identified Majengo market to be a special chicken market and to construct a small-scale chicken abattoir.

ANNEX 7: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH INTERVIEWS WITH HEAD OF DEPARTMENT FOR LIVESTOCK – DODOMA CITY COUNCIL

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
17 August 2018	Mr. Mwesigwa	i. What are the opportunities available for indigenous chicken processing?	a. Availability of customers requiring processed chickens	- Customers for slaughtered chickens include: Individual people coming to the central market, Supermarkets, Hotels, Restaurants and Fast food service providers
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	- Many customers in Dodoma city prefer indigenous chickens - There are few customers who prefer broiler chickens because of soft meat - Many customers take whole chickens; supermarkets prefer cut chickens
		i. What are the current initiatives for indigenous chicken processing?	Any initiatives	- In the year 2016 Dodoma City Council allocated Tzsh. 60,000,000 for construction of small-scale chicken abattoir at the central market - The allocated fund was from Dodoma City council own source collection.

				<ul style="list-style-type: none"> - The facility is 20m long and 15m wide with capacity of slaughtering 500 chickens per day. It has 1 gas cooker for scalding and 1 plucking machine with capacity of 6 chickens. - The slaughter facility is operated by Public Private Partnership (PPP). Live chicken retailers formed a group which operates the facility while Dodoma city council appointed livestock officer for meat inspection
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ANNEX 8: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH CHICKEN ABATTOIR OPERATORS – DODOMA CENTRAL MARKET

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
17 August 2018	Mr. Mlele (Chairman of the group)	i. What are the opportunities available for indigenous chicken processing?	a. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - There are many customers who take slaughtered chickens; these include: Individual people who buy live chicken and slaughter in the facility, Supermarkets, Hotels, Restaurants and Fast food service

				providers
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Many customers who come at the market take indigenous chickens - Fast food service providers take broiler chickens - Many customers take whole chickens; supermarkets prefer cut chickens
		ii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - Dodoma City Council constructed the abattoir in 2016 and started to operate in 2017 - Dodoma City council asked the live chicken retailers to form a group so as to collaborate in operating the slaughter facility. - The abattoir is operated by a group of live chicken retailers with 30 members - 600 chickens are slaughtered per day and Tzsh. 500 are paid per 1 slaughtered chicken - The abattoir has a total of 8 workers

ANNEX 9: CHECKLISTS AND TRANSCRIPTIONS OF INTERVIEWS WITH INTERVIEW WITH MANAGER OF FARAJA SUPERMARKET – DODOMA CITY

DATE	RESPONDENTS	RESEARCH QUESTIONS	CHECKLISTS	TRANSCRIPTIONS
17 August 2018	Mr. Richard Sebi (Mager of Faraja Supermarket)	i. What are the opportunities available for indigenous chicken processing?	b. Availability of customers requiring processed chickens	<ul style="list-style-type: none"> - Customers who buy slaughtered chickens; include: Individual people who come in the supermarket, Hotels and Restaurants - Average of 50 processed chickens are sold per day - The price is Tzsh. 10,000 per 1kg of chicken
		ii. What are the quality attributes of processed indigenous chickens required?	a. Breed of chickens required b. State of processed chickens (whole chicken or cuts)	<ul style="list-style-type: none"> - Many customers prefer indigenous chickens - Many customers take cut chickens
		iii. What are the current initiatives for indigenous chicken processing?	Any initiatives	<ul style="list-style-type: none"> - The chicken abattoir constructed at the central market is a good source of slaughtered chickens to sell in the supermarket - Many supermarkets in Dodoma city sell processed chickens to customers who shop in supermarkets

ANNEX 10: ATTENDANCE REGISTER OF STAKEHOLDERS MEETING MEMBERS

UKUTAND WA WADU WA UFUATI
WA KUKU NA BIASARA YA KUKU
KATIKA MAMUPA YA SIMBA
TAREHE 16/08/2018

NO	JINA KAMILI	SHIRUKI/KAZI	MAMUSILIANO	SAINI
1.	A.R. KATEKEZI	MUFI	0756868096	A
2.	MICHAEL MJOHU	AFISA MIFUGO	0762306049	K
3.	BENEDICT B. RULUEN	AFISA MIFUGO	0755-90384	R
4.	ELIUMBA G. EDWAR	"	0765-840083	R
5.	RUTH -J. MATIKOT	A/mungu	0755440450	R
6.	LUKANA CHILUNGA	AFISA UGAWI	0765627260	R
7.	HAMISI K. MSANGI	MWALIMU (VETA)	0765424197	R
8.	SUSAN KULA	MAMA MAMUPA	07570947A	R
9.	EPHRAIM KOTHAMU	UFUATI	0762981852	R
10.	ISSA SALUM	MKULIMA	0754867505	R
11.	SHABANI MAHILI	Mkulima	0752-8784	R
12.	MKHEIYA MSIBABA	MKULIMA	0764528939	R
13.	WORD KASABU	Mfugaji Kuku	0764018456	R
14.	IBRAHIM SHABAN	Mfugaji Kuku	0767316918	R
15.	HAMISI SIMBA	M/KUKU	0768575291	R
16.	SALUM SHABANI	MF/KUKU	0745974179	R
17.	ATHUMANI RAMADHANI	Mfugaji Kuku	0745061990	R
18.	MWAMBAI MUKO	MWATABASHARA PEMBEJO	0753772004	R
19.	OMARY MULILENY	MUZATI WA PEMBEJO	0745901440	R
20.	JOEL D. TANBAI	BDD-SIDO	0767080012	R
21.	DEBORAH. E. MASAIKE	MUZATI WA PEMBEJO	0767053-706149	R
22.	ASNA K. MCHANI	AF/MIFUGO	0769366156	R
23.	HERESIA L. SALUM	AF/MIFUGO	07634545998	R

UKUTAND WA WADU WA UFUATI
WA KUKU NA BIASARA YA KUKU
KATIKA MAMUPA YA SIMBA
TAREHE 16/08/2018

NO	JINA KAMILI	SHIRUKI/KAZI	MAMUSILIANO	SAINI
24	LEONARD C. NDARI	UFUATI WA MUZATI PEMBEJO	075709227	R

KUNDI 1	
(i) Changamoto/Vikwazo gani vipo kila uongereji thamani wa kukuu?	
→ Kutokua na elimu ya kutokua kwa wafugaji	
→ Ukosefu wa machinjira ya kukuu	
→ Ukosefu wa maboko (bucha)	
→ Ukosefu wa elimu katika uongereji wa thamani za bidhaa za bitaka na kukuu	
KUNDI 1	
(ii) Ni namna gani changamoto hizo zinaweza kukabilwa?	
→ Wataalamu kuwa karibu na wafugaji	
→ Wafugaji kujitilia elimu wanayopewa na wataalamu	
→ Kujenga machinjira ya kisasa ya kukuu	
→ Kujenga maboko ya kisasa	
→ Senikali kutoa elimu juu ya uongereji wa thamani za bidhaa za kukuu, mfanyakazi, kucha, mazuta.	

No	Mda	Jukumu
1. SIDO		- Kutengeneza mashine - Kutoa mifaa vyanzo - Kutoa mifaa ya kutengeneza mashine - Kutoa mifaa ya kutengeneza mashine
2. WATAALAMU		- Kutoa elimu kwa wafugaji wa wakulima wengine. - Kuwa kambi wa wataalamu.
3. MFIUGAZI		- Kuwa kambi wa wataalamu. - Kutoa elimu kwa wafugaji wa wakulima.
4. WAUZOJI wa Pembejeo		- Pembejeo bara na kawafasi na ambao hujafika ndia na mwanadamu. - Kutoa vyanzo bara.
5. HAIWA MFIUGAZI		- Kuwaza wataalamu na kawafasi. - Kuwaza elimu kwa wafugaji wa wakulima. - Kuwaza mifaa ya kutengeneza mashine.

KUINDI NO. 2

(1) Changamoto/vikwazo
 katika uongezaji wa thamani wa kuku:

- Ukosefu wa mtaji.
- Kutokuwa na elimu ya ufugaji na uongezaji thamani
- Ukosefu wa masoko.
- Upungufu wa wataalam.
- Ukosefu wa mbegu bora za kuku kwa wafugaji.

KUINDI NO. 2

(2) NAMNA YA KUKABILIANA NA CHANGAMOTO:

- Elimu itolewe kwa wafugaji juu ya uongezaji thamani na ufugaji bora.
- Wafugaji wawezeshwe katika Mtaji.
- Masoko ya uhakika.
- Kuwe na ongezeko la wataalam. vijijini/mjini

KUINDI NO. 2

(3) JUKUMU LA KILA MDAU.

S/N.	MDAU	JUKUMU.
1.	MFUGAJI.	- Kufuga kitaalam ili kuongeza thamani - Kuzalisha kwa wingi
2.	PEMBEJEO	- Uuzaji wa bidhaa zenye ubora, zilizokidhi mahitaji. - Kuloa Elimu, kitaalam.
3.	MTAALAM.	- Kutoa Elimu, Ushauri Uhamasishaji, tiba.
4.	TAASISI-BANKI, SEMA/NETA/HAPA MAJIRI BRAC NA	- Kutoa Elimu - Uwezeshaji wa wadai - Uwezeshaji wa mikopo
5.	MFANMEMISHA ARA	- Kutafuta masoko ya uhakika - Kuhakikisha bidhaa ni ya kutosha inapatikana.
6.	MLAJI	- na yenye ubora.
7.		- Anapata bidhaa bora.

S/N.	MDAU	JUKUMU.
1.	MFUGAJI.	- Kufuga kitaalam ili kuwaga za thamani - Kuzalisha kwa wingi
2.	PEMBEJEO	- Uuzaji wa bidhaa zenye ubora, zinazokidhi mahitaji. - Kutoa Elimu, kitaalam.
3.	MTAALAM.	- Kutoa Elimu, Ushauri Uhamasishaji, Tiba.
4.	TAASISI-BANKI SEMA/VETA/HAPA MAK BRAC NA	- Kutoa Elimu - Uwezeshaji wa wadau - Uwezeshaji wa mikopo
5.	MFANMEMIA ARA	- Kutafuta maroko ya uhakika - Kuhakikisha bidhaa map ya kutosha inapatikana na yenye ubora.
6.	MLAJI	- Anapata bidhaa bora.
7.		

ANNEX 12: SCORING AND RANKING OF CONSTRAINTS OF INDIGENOUS CHICKEN PROCESSING AND LIST OF ROLES OF EACH STAKEHOLDER DURING STAKEHOLDER MEETING

VIKWAZO VYA UONGEZAJI THAMANI WA ZAO LA KUKU.				MAJUKUMU YA KILA MDAU KTE KUONGEZA THAMANI ZAO LA KUKU	
Nq.	KIKWAZO	KURA	NAFASI	MDAU	MAJUKUMU
1.	Ukosefu wa mitaji	4	3	SIDO wataalam	- kutengeneza mashine za vifanyaji - kutoa mikopo kwa wadau
2.	Elimu ndogo ya uongezaji thamani	3	4	Wafugaji	- kutoa elimu kwa wafugaji na wadau juu ya ufugaji na kuku
3.	Ukosefu wa masoko	1	6	Wauzaji pembejeo	- kufanya ufugaji wa kisasa na kuku bora kutishereza soko
4.	Upungufu wa wataalam	2	5	Serikali	- kusambaza vifananga bora, chanjo na dawa kwa wakati
5.	Ukosefu wa machinjio ya kuku	8	1	Wafanyabiashara wa kuku	- kuhamasisha ujenzi wa machinjio na bucha za kuku
6.	Ukosefu wa bucha za kuku	5	2	Taasisi na NRO (Benki, VETA, SEMA, BRAC)	- kutenga maeneo ya ujenzi - kuajili wataalam wakutoka
	Jumla	23		Maduka, hoteli, Migahawa	- kutafuta masoko ya uhekiko na bucha - kuweza shi mikopo - kutoa hama sa na elimu